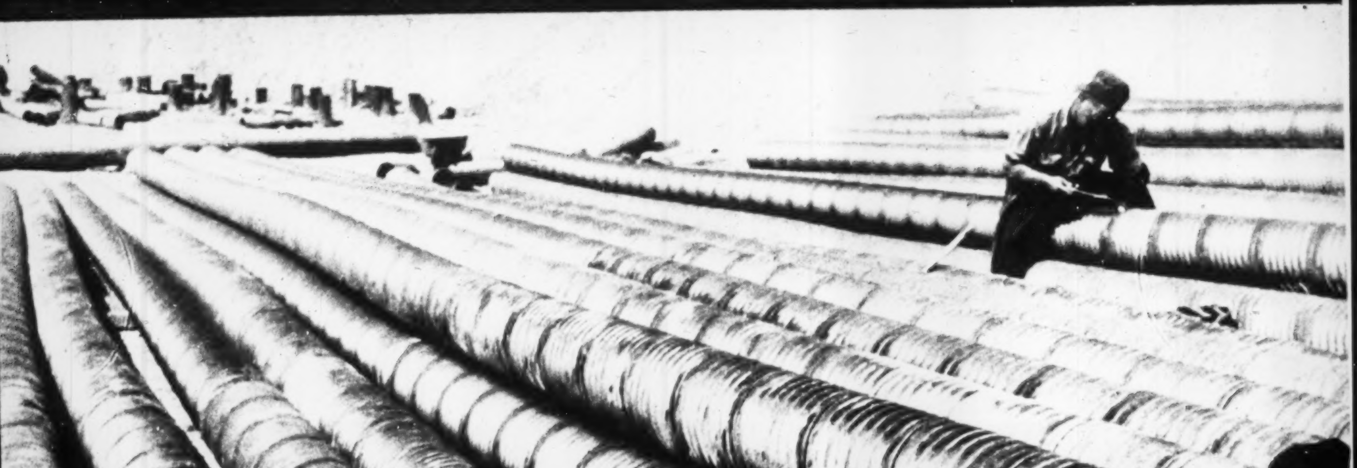
ENGINEERING NEWS-RECORD

SEVENTY-NINTH YEAR OF PUBLICATION



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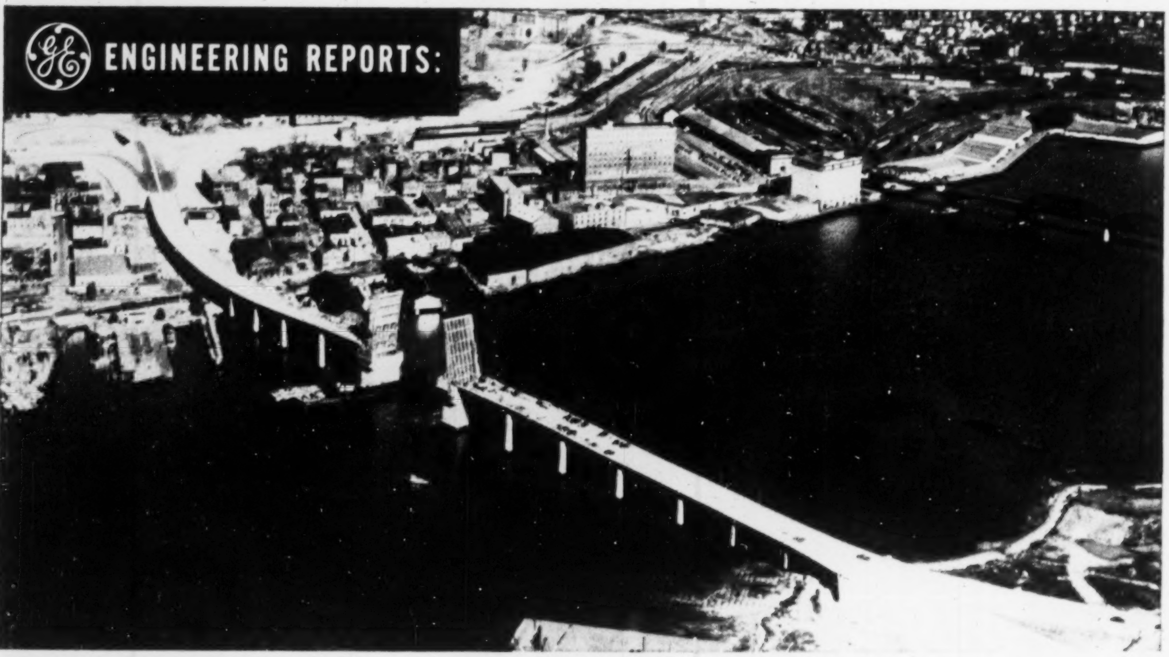


MOTORISTS SAVE 10 TO 30 MINUTES crossing from Norfolk to Portsmouth via the new G-E equipped bridge and tunnel. Bridge is 4-lane, 2135 ft between abutments. Bascule span is of the double-leaf, rolling-lift type with leaves each 90 ft long.

Bridge's drive system helps speed 29,000 cars per day

G-E equipment at Portsmouth - Norfolk Bridge gives fast movement, positive control of leaves

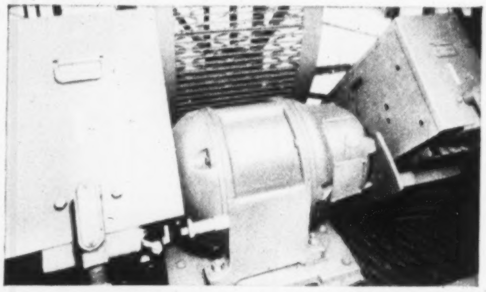
The new 4-lane bascule bridge across the Elizabeth River at Norfolk, Va.—part of a combined bridge and tunnel project built for the Portsmouth-Norfolk Bridge Tunnel Commission—is currently handling over 29,000 vehicles per day. Ability to handle this heavy traffic flow is due in part to electric equipment supplied and co-ordinated by General Electric.

In helping to develop the bridge's drive system, G-E engineers worked closely with J. E. Greiner Co., consulting engineers, Tidewater Construction Corp., engineers and contractors, and Tuck and Kendall Inc., electrical contractor. Result of this co-operation: a simple, dependable drive system that expedites traffic because it is easy to operate and provides positive-action control of bridge leaves for fast movement and smooth, safe seating.

This is one more example of how G-E engineers can help your engineers or consultants on electric equipment for heavy construction projects. Contact your local G-E Apparatus Sales Office early in the planning stage. General Electric Co., Schenectady 5, New York. 664-26

1878 75 1953
YEARS OF ELECTRICAL PROGRESS

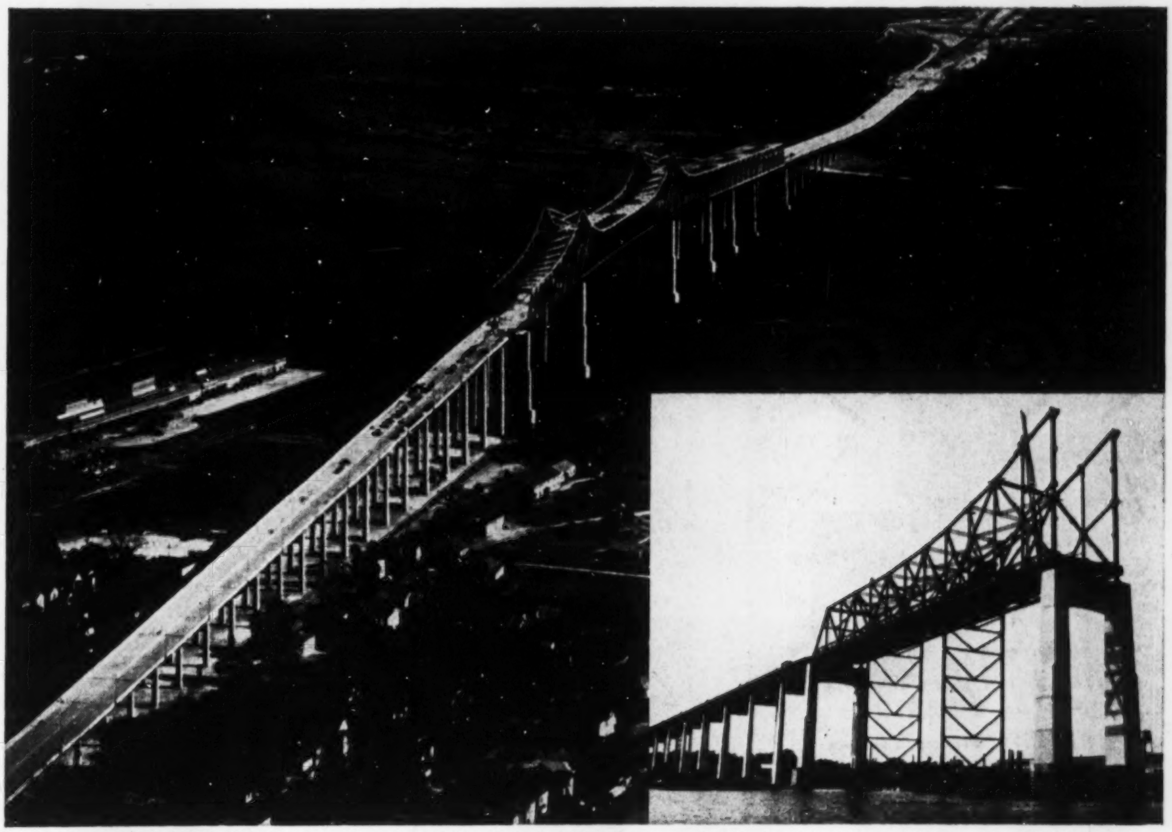
POSITIVE-ACTION CONTROL of span motors is centered in this G-E operator's desk. Fine-scale selsyn dial pinpoints position of each leaf during seating.



EACH LEAF IS MOVED by 2 G-E 25-hp motors (one shown). G-E motor control center, operated from desk, controls these and tail locks, gates, barriers.

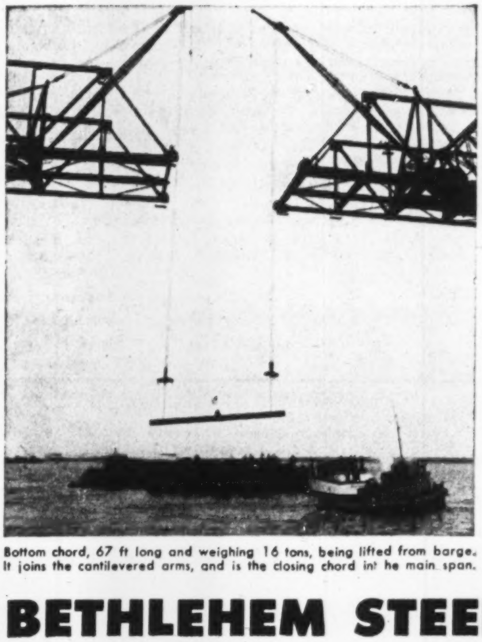
Engineered Electrical Systems for Heavy Construction

GENERAL ELECTRIC



Left: Air view, looking east, of John E. Mathews Bridge, Jacksonville, Florida. Owner: State Road Department of Florida; Sam P. Turnbull, state highway engineer; W. E. Dean, engineer of bridges; Designers and Supervisors of Construction: Parsons, Brinckerhoff, Hall & Macdonald, New York; and Reynolds, Smith and Hills, Jacksonville, Associated Architects and Engineers. Right: Erection, on falsework, of main-span 406-ft anchor arms. Girder spans shown at left of this picture.

New Bridge Is Link In Jacksonville Expressway System



Bottom chord, 67 ft long and weighing 16 tons, being lifted from barge. It joins the cantilevered arms, and is the closing chord in the main span.

This magnificent new high-level bridge at Jacksonville, the John E. Mathews Bridge, is one of the largest of its type ever built in Florida. The 7376-ft structure was named for a justice of the Florida Supreme Court. It crosses the St. John's River, connecting Jacksonville with Arlington, and becomes a major unit of the Jacksonville-Duval County Expressway System.

The main-channel span of the John E. Mathews Bridge is an 810-ft through-cantilever truss, providing a 700-ft clear channel between fenders. The truss has a 150-ft underclearance at low water.

The bridge's approaches are beam spans and simple plate-girder spans, up to 115 ft in length. The 3447-ft east-end approach to the main span includes three truss spans, having a total length of 986 ft. The west-end approach is 2306 ft long. The main cantilever spans, consisting of two 406-ft anchor arms, plus the channel span, have a combined length of 1622 ft.

The bridge's four-lane roadway is divided by a raised concrete mall, 4 ft wide. There is also a 2-ft walk at either side of the roadway. With the exception of the main span, with its steel-grid floor, the roadway is of reinforced concrete.

Construction of the John E. Mathews Bridge was carried on from both banks of the river simultaneously. Steel for the 13,000-ton superstructure was rolled, fabricated and erected by Bethlehem.

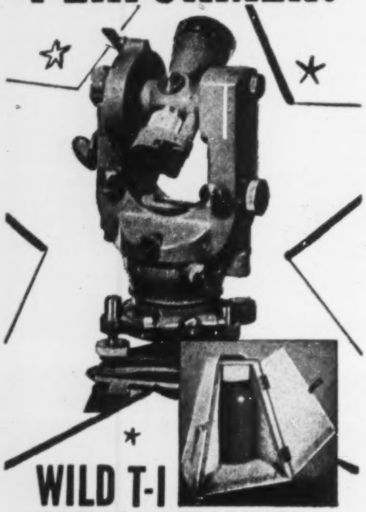
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL CONSTRUCTION

STAR PERFORMER!



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ABP Member

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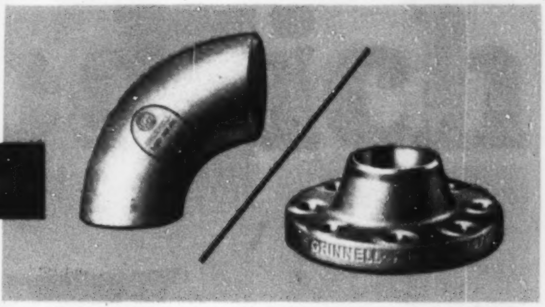


for trouble-free service

GRINNELL

STAINLESS STEEL WELDING FITTINGS and FLANGES

To help combat mounting costs in the installation and maintenance of piping systems where corrosive or certain other service conditions are involved, Grinnell offers a comprehensive range of welding fittings and flanges in stainless steel.

- **To prevent corrosive attack.**
- **To obtain adequate impact resistance at low temperatures and sufficient creep strength at high temperatures.**
- **To provide sanitary conditions.**
- **To avoid contaminating the product.**

Grinnell welding fittings and flanges are available in types 304, 347 and 316. These are in the chromium-nickel grades known as "18-8". The corrosion resistant properties of stainless steels are primarily due to the chromium content which ranges from 17% to 20%. The addition of nickel in ranges from 7% to 14% improves the corrosion resistance as well as the properties at elevated temperatures. A molybdenum addition of 2% to 3%, as found in type 316, increases the resistance to sulphurous and phosphoric acids, brine and hypochlorite solutions, and improves the general resistance to other corrosive liquids, as well as improving the physical properties at elevated temperatures. A columbium addition of approximately 0.4% to 1.0%, as found in type 347, creates non-susceptibility to carbide precipitation which can cause intergranular corrosion.

In addition to stainless steel, Grinnell offers welding fittings and flanges in carbon steel, nickel, Inconel, Monel, aluminum and brass.

Write for new booklet giving complete data on Grinnell stainless steel welding fittings and flanges. No obligation.

stainless steel welding fittings
Types 304, 347, 316

DESCRIPTION	SCHEDULE†	PIPE SIZE, IN.‡
90° Long Radius Elbow 45° Long Radius Elbow 180° Long Radius Return Straight Tee	5s, 10s, 40s, 80s	½ to 12
Reducing Tee	5s, 10s, 40s, 80s	¾ to 12
Cross (Straight and Reducing)	5s, 10s, 40s, 80s	1¼ to 12
Concentric Reducer Eccentric Reducer	5s, 10s, 40s, 80s	¾ to 12
Lateral (Straight or Reducing)	5s, 10s, 40s, 80s	1 to 12
Cap	5s, 10s, 40s, 80s	½ to 12
Lap Joint Stub End-Long	10s, 40s, 80s	½ to 12
Lap Joint Stub End-Short	5s, 10s, 40s,	½ to 12

† 5s is Featherweight, 10s Lightweight, 40s Standard, 80s Extra Strong.
‡ Larger sizes available on special order.

stainless steel flanges

150 lb. and 300 lb. Steel Flange Standard *(Higher series available on application).*

DESCRIPTION	PIPE SIZE, IN.
Welding Neck Slip-on Lap Joint Threaded Socket Type Blind	½ to 24

150 lb. Corrosion Resistant Standard. *(For use with schedule 10s and 5s pipe. Rated at 150 psi at 500°F, 225 psi at 150°F, when used with full-faced gaskets).*

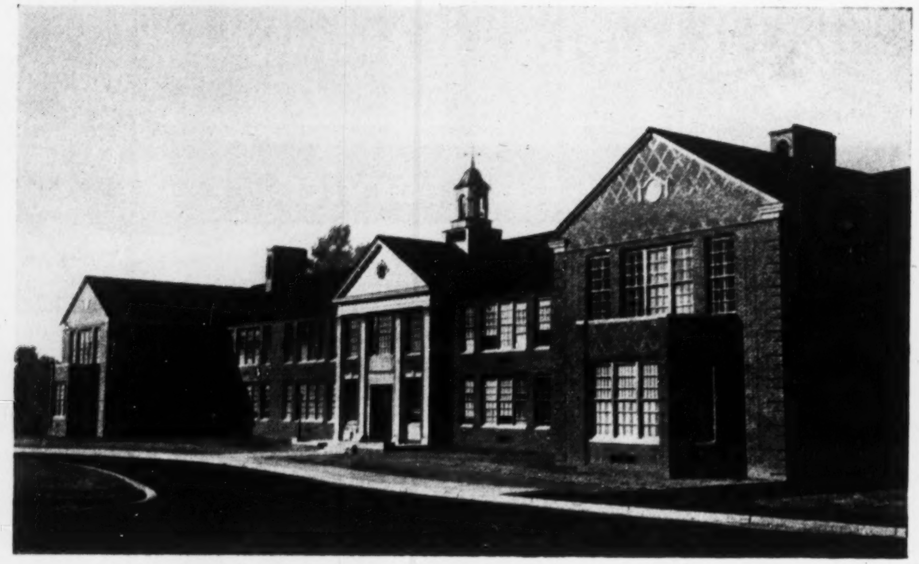
DESCRIPTION	PIPE SIZE, IN.
Buttwelding Slip-on Blind	½ to 12

GRINNELL

WHENEVER PIPING IS INVOLVED

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems



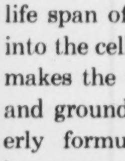
In Ladue, St. Louis County, Missouri, this new million-dollar school was built by Robert Paulus Construction Company.

to make wood LAST LONGER treat it with MONSANTO PENTA

Lumber treated with penta will resist rot and insect attack far beyond the normal life span of untreated timber. Forced deep into the cells of the wood by pressure, penta makes the wood virtually time-proof. Rain and ground water can't wash it out. Properly formulated and applied, penta will leave your wood clean, paintable and dimensionally stable, if specified.

In public buildings, durability is a must. Horton Watkins High School, newly built in one of St. Louis County's finest residential sections, is assured many years of extra life. Nailing strips and sleepers, door frames, and other wood parts in the school are penta pressure-treated against decay and wood-destroying insects.

You build *permanence* in your work and save money for your client when you specify Monsanto Penta.



Information for contractors. This brochure, titled "Specify Penta," gives facts and figures on penta applications. For your copy, write: Monsanto Chemical Company, Organic Chemicals Division, 800 North Twelfth Blvd., St. Louis 1, Missouri.

Understripping of gym floor, as well as white-pine door frames, was pressure-treated to a 6# retention of penta solution.

Penta has wide usage possibilities. It is specified regularly by utilities, railroads, in heavy construction and in farm and home building.

MONSANTO
CHEMICALS – PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

B.F. Goodrich

New Earth-Mover tires haul giant loads, yet float over sandy ground

FRANK T. HICKEY, INC., of Los Angeles is an earth-moving firm operating throughout southern California. The unit above is hauling 24 tons of sand fill for troop barracks at Fort Ord.

Plowing through sandy soil under a 24-ton payload, plus the weight of the equipment, would cause most tires to bog down and become useless. That's why this contractor mounts his machinery on new B. F. Goodrich All-Nylon 65" Special Earth-Mover tires. They are specifically designed to pull through loose, shifting soils without sinking in.

Special Earth-Mover tires do this because they operate at low air pressures that give greater flexibility. The tires conform more to the soil, rolling over it rather than digging into it. The cord body of the tire is made of nylon which stands the strain of this flexing action better than other materials.

Because extra-high cleats often have a tendency to churn the ground, Special Earth-Mover cleats are low and shallow. They provide positive traction, yet will not dig in and cause the tire to flounder. Your equipment stays on top of the earth and on schedule.

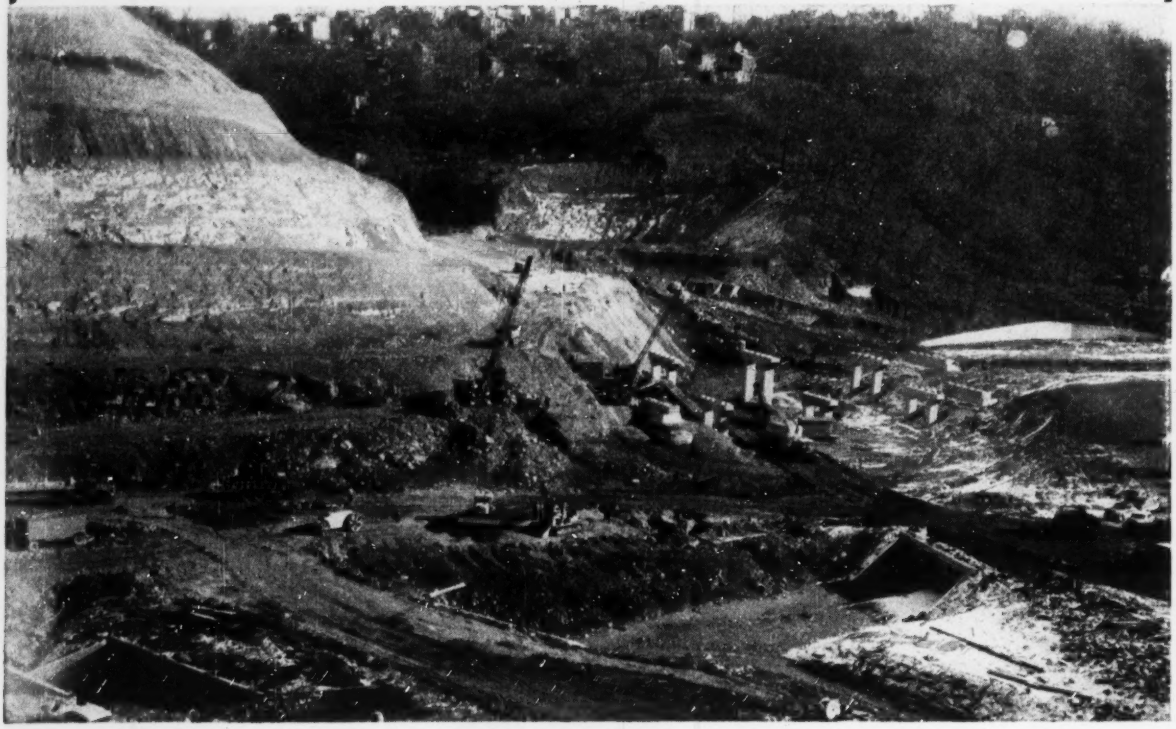
If your off-the-road job calls for work in soft, sandy ground, you can get top traction and flotation by using new B. F. Goodrich All-Nylon Special Earth-Mover tires. They are the result of two years' development and testing by a noted off-the-road equipment manufacturer.

B. F. Goodrich makes a complete line of tires that cut costs and save time on all types of off-the-road service. See your retailer—he's listed under Tires in the Yellow Pages of your phone book—or write *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

Specify B. F. Goodrich tires when ordering new equipment

GULF PRODUCTS *and* FINE SERVICE
keep equipment rolling on
Pittsburgh Parkway Project



Dinardo, Inc., Pittsburgh, Pa. has the contract from the Pennsylvania Department of Highways for construction of the Saw Mill Run Interchange on the Penn-Lincoln Parkway West. The job involves moving 750,000 cu. yds. of earth and building 6 structures. This is one of several important Dinardo contracts in connection with Pittsburgh's huge Penn-Lincoln Parkway project.

It's a speedier, more profitable job when equipment performs smoothly and dependably. And the use of quality petroleum products is one of the surest guarantees of this kind of performance.

That's why so many contractors on the big, tough jobs specify Gulf lubricants and motor fuels. They have found that Gulf lubricants provide an extra margin of protection against mechanical delays . . . that Gulf fuels deliver full power . . . and they appreciate Gulf's prompt delivery service.

Let us discuss with you how Gulf Quality Petroleum Products can help you on your next job. Write, wire, or phone your nearest Gulf office.

GULF

P&H

HARD HITTING STABILITY!

No question about it— you've got it "on the hook" with a P&H!

Greater stability not only lets you handle heavy loads with less danger of tipping strains, but also enables you to use your power more freely — gives you the added capacity to get more done in a day's work. Rolled alloy steels, welded throughout, give you the structural strength to take it in stride.

But it doesn't stop there. True tractor-type crawlers give you the smoothest, surest-footed mobility you've ever known on a power crane or shovel. You can turn gradually, sharply, or right about-face — maneuver in and out of tight corners with perfect ease.

You've heard P&H owners brag about what their machines will do. Isn't it time to find out for yourself? You've nothing to lose, much to gain in modern performance and lower costs.

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CORPORATION
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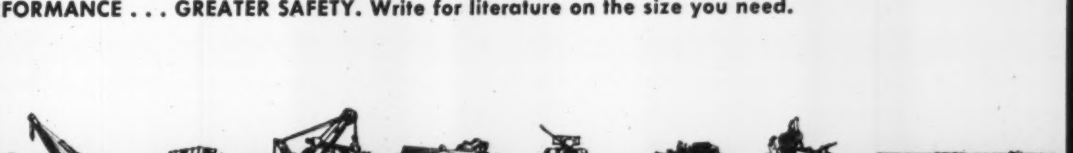
See your P&H Dealer!

Look to P&H for the most modern features in Power Shovel and Truck Crane construction. There's all-welded design, live roller circle, triple-safe boom hoist, hydraulic control, plus a low center of gravity that provides a higher ratio of lifting capacity to gross weight. This means more WORKABILITY . . . BETTER PERFORMANCE . . . GREATER SAFETY. Write for literature on the size you need.

the P&H Line



how NEW SMYRNA BEACH softens water
AUTOMATICALLY!

THE installation of Permutit automatically controlled zeolite water softeners economically solved the problem of hard water for this Florida city. The Automatic Regeneration feature saves valuable man hours, eliminates the possibility of costly human errors, and assures a constant supply of clear, soft water.

Well water of 20 grains hardness is softened by Permutit Q, the high capacity sodium cation exchanger, which in this installation is regenerated with brine from a nearby salt well.

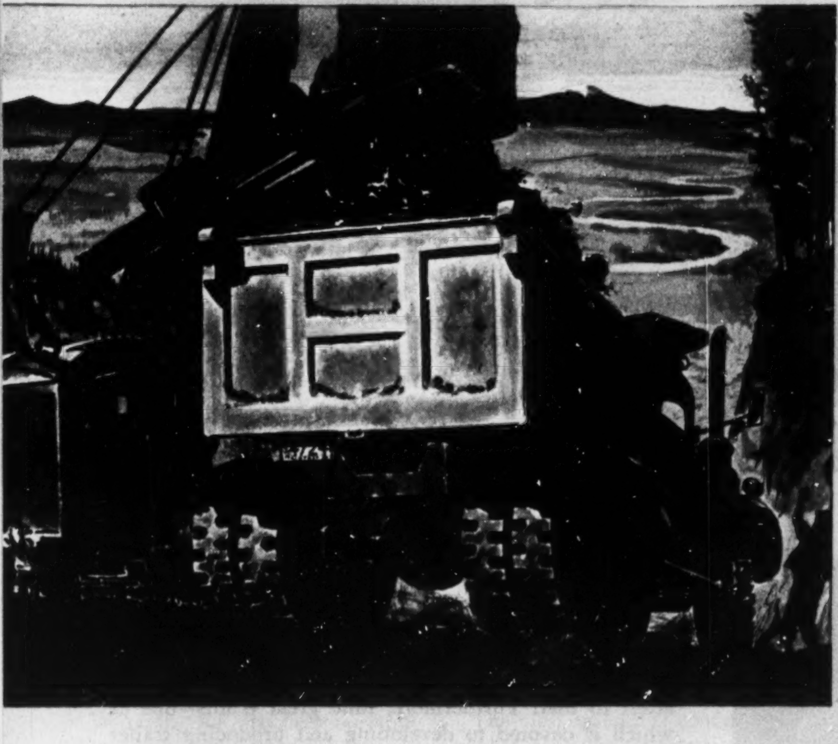
Consulting Engineers, Russell & Axon of Daytona Beach, Florida, planned the layout and recommended Permutit Automatic Equipment and high capacity Permutit Q. For information concerning your city's water problems write to: THE PERMUTIT COMPANY, Dept. ENR-3, 330 West 42nd Street, New York 36, N. Y.

WATER CONDITIONING HEADQUARTERS
FOR OVER 40 YEARS

PERMUTIT®

Tandem-Drive Units

MOVE EXTRA-HEAVY LOADS OVER EXTRA-RUGGED TERRAIN

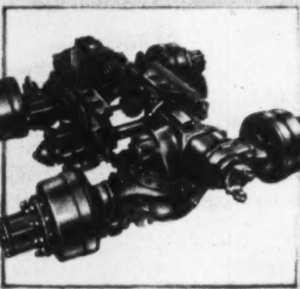


High-Powered Engines Can Be Used to Full Advantage!

TDA makes it possible to move the heaviest type of loads through rough off-highway terrain. In such fields as logging, mining or construction, where trucks must move miles over temporary roads to and from jobs, TDA Tandem-Drive Units provide the needed strength and pulling power.

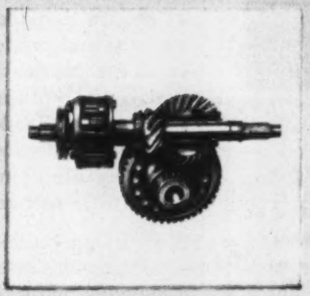
These heavy-duty axle units take full advantage of high-powered engines, resulting in greater tractive ability and lower operating costs. TDA Tandem-Drive Units provide truckers with many other important advantages, too. For instance, the axles are always kept correctly spaced and aligned by means of a parallelogram suspension of the torque rods. This eliminates the possibility of weight transfer.

Since tandem-drive units first came into use more than 30 years ago, Timken-Detroit has led the trucking field in their design and manufacture. Designed and built in their entirety by TDA, these rugged tandems have been used in practically every type of hook-up for tandem rear axles in this country and abroad, under every make of six-wheel truck. Therefore, the TDA design of tandem-drive units reflects this 30-year record of engineering and manufacturing leadership. Write to Timken-Detroit today for the interesting story of Six-Wheelers and TDA Tandem-Drive Units.



HEAVY-DUTY TANDEM WITH DOUBLE-REDUCTION DRIVE

Available with either through drive or inter-axle differential, these rugged units are especially adaptable for off-highway use. They move mammoth loads with ease regardless of terrain. Powerful TDA Brakes assure positive vehicle speed control at all times.



DOUBLE-REDUCTION FINAL DRIVE WITH INTER-AXLE DIFFERENTIAL

This double-reduction final drive, has rugged, time-proven Hypoid gearing in the first reduction. The slower gear ratios practical with this type of final drive make it especially adaptable to high-powered engines—an important feature in off-highway operation.

The Accepted TDA CO® *Standard*

AXLES

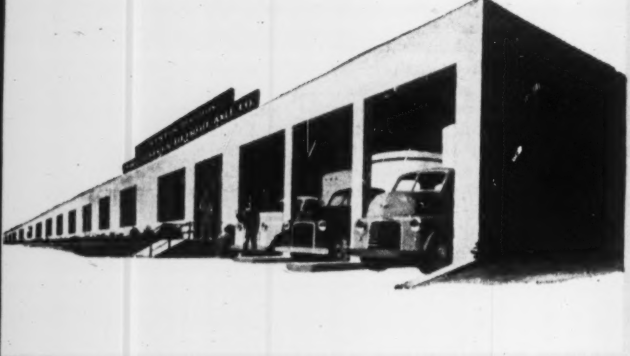
THE TIMKEN-DETROIT AXLE COMPANY

Detroit 32, Michigan

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

PLANTS AT: DETROIT AND JACKSON, MICH. • OSHKOSH, WIS. • UTICA, N. Y. • ASHTABULA, KENTON AND NEWARK, OHIO • NEW CASTLE, PA.

The best-engineered trailer axles on the road come from Timken-Detroit!



This modern manufacturing plant, located at Kenton, Ohio, houses the Trailer Axle Division of The Timken-Detroit Axle Company.

Timken-Detroit *knows* trailer axles! More than 40 years' experience in building axles for trucks, buses and trailers attest to that! Furthermore, nine great plants—one of which is devoted to developing and producing trailer axles—are provided with every modern engineering, research and production facility. Highly trained technicians are constantly at work improving the materials, design and workmanship that go into every trailer axle produced by Timken-Detroit. Months, and often years, are spent in developing and testing axles before they ever leave the blueprint stage. In the trailer axle field, too, Timken-Detroit knows its business!

The Accepted TDA CO® Standard

AXLES

THE TIMKEN-DETROIT AXLE COMPANY
Detroit 32, Michigan

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

PLANTS AT:
DETROIT AND JACKSON, MICH. • OSHKOSH, WIS. • UTICA, N. Y.
ASHTABULA, KENTON AND NEWARK, OHIO • NEW CASTLE, PA.

READER COMMENT

No objection

Sir: Contrary to the statement in the news item (ENR Feb. 5, 1953, p.27), the Corps of Engineers has no objection to construction of Priest Rapids Dam by the Grant County Public Utility District. However, the project should develop the full capabilities of the site as a part of the comprehensive plan for the control and utilization of the water resources for power, flood control, navigation and other beneficial purposes.

The Corps of Engineers will continue to cooperate with the Grant County PUD in every way possible, including the furnishing of available data and preliminary plans. Since the project has been authorized for construction by the Corps of Engineers, additional action by the Congress may be necessary if the Priest Rapids Dam is to be constructed by the PUD. If the PUD is to be compensated for the cost of flood control storage, additional legislative authority would be necessary.

Col. E. C. Itschner
Division Engineer
North Pacific Division
Corps of Engineers
Portland, Ore.

U. S. firms in Canada

Sir: In Engineering News-Record Jan. 8, 1953, p 56, there appeared a story about U.S. firms opening engineering offices in Canada. You omitted mention of Giffels & Vallet of Canada, Ltd., Engineers. The office in Windsor, Ont., has been operating since 1950, and numbers among its clients American Can Co., Polymer Corp., A. V. Roe Canada, Ltd. and Ford Motor Canada, Ltd. That office is now designing the largest single industrial building in Canada for Ford at Oakville, Ontario. This building will comprise 1,400,000 sq ft of floor area.

Kenneth Howard
Giffels & Vallet, Inc., L. Rossetti
Detroit, Mich.

Is coliseum too elaborate?

Sir: The article in your Feb. 5 issue, "Curved roof on cables spans big arena," was very interesting, but it raised one question: Why was it necessary to build the abutment portion of the arches with the elaborate system of footings tied together by cables in a tunnel? Why could the arches not have started at the point labeled "Detail B" and rested on a buttressed pier?

The pier would have had to be buttressed to carry the outward thrust, but it would seem that the other horizontal components of the thrust in the two arches would have balanced each other, and that this construction would have materially reduced the cost.

Ralph W. Powell
Department of Mechanics
The Ohio State University
Columbus, Ohio

Fire protection for underground shelter

Sir: In your issue of Nov. 13 last, you report the underground communications center built by the Army inside Raven Rock Mountain about five miles east of Fort Ritchie, Maryland. I have not as yet seen anyone who would suggest how best to deal with one detail of the construction of this and other large underground occupancies. It should have the attention of designers because it may be desirable to have a substantial amount of "bombproof" space available.

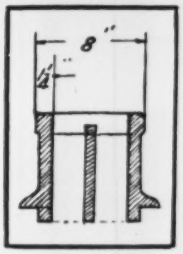
A fire inside one of these caverns would give off heat, smoke, and toxic products of combustion and set up a condition whereby the majority of the occupants of such a building could be killed in a fire simply because they could not get out as fast as the fire could spread. The ordinary ventilating system may or may not be arranged so that it also forms a flue system for venting pressures developed in fires.

The most aggravated condition will be that which is produced when, as and if, such underground spaces are used for warehouse or manufacturing purposes.

One reason for large fires and losses in warehoused materials is that buildings, even fire-resistive ones, tend to deny access to piles of burning material. Since the control of fires in many materials requires that the piles be actually pulled apart to get at the burning sections, this matter of access is of major importance. As a minimum form of fire protection, all areas should be protected by properly designed automatic sprinkler systems.

The pressures developed in a fire would force smoke, toxic products of a combustion, heat and flames directly against any persons who might attempt to enter an underground space. What such spaces need is an arrangement of flues so located as to make sure that fire in any section is

After 20 Years



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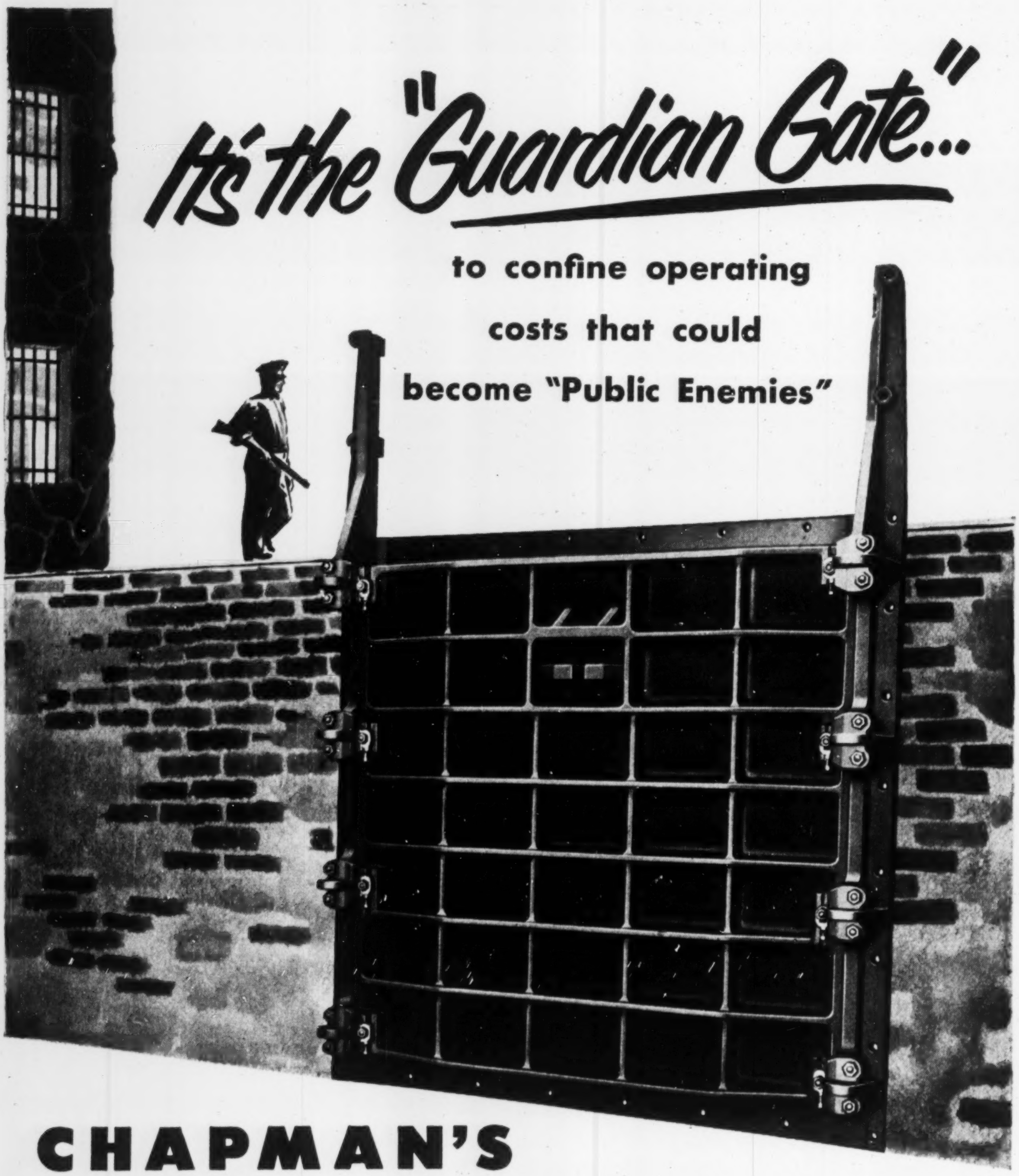
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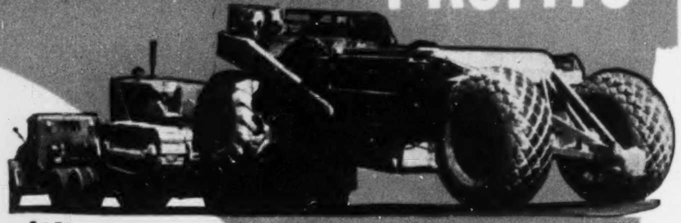

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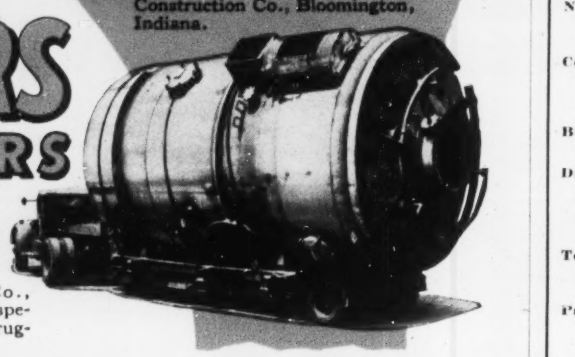

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READER COMMENT

vented in a direction away from that which must be kept open for exit of occupants and as a means of access for fire fighting. The flue systems I visualize probably would have to be separate from the ventilating system, but I don't see how caverns filled with combustible material can be made tolerably safe unless the design engineers can find some way to deal with the pressures and heat from fires.

HORATIO BOND
Chief Engineer
National Fire Protection Association
Boston, Mass.

CALENDAR

Third Midwestern Conference on Fluid Mechanics, University of Minnesota, Minneapolis, Mar. 23-25.

American Congress, surveying and mapping, Shoreham Hotel, Washington, D. C., Mar. 23-25.

National Public Health Engineering Conference, Gainesville, Fla., Mar. 24-25.

Conference on prestressed concrete, Newark College of Engineering, Newark, N. J.—Apr. 6-9-13-16-20-23-27 and 30—7:30 to 9:30 P. M.

Building Officials Conference, Hotel Baker, Dallas, Tex., April 6-9.

Diamond Jubilee Convocation, Case Institute of Technology, Cleveland, Ohio, April 10-11. Topic "The Challenge of Free Men in the Atomic Age."

Tennessee Highway Conference, University of Tennessee, Knoxville, Apr. 16-17.

Pacific N. W. Industrial Waste Conference, State College of Washington, Pullman, Wash., Apr. 16-17.

National engineering conference, American Institute of Steel Construction, Engineering Societies Bldg., Detroit, Mich., Apr. 22-23.

Conference on residential air-conditioning, Packard auditorium, Lehigh University, Bethlehem, Pa., Apr. 24-25.

Concrete Reinforcing Steel Institute, annual meeting, the Carolina Hotel, Pinehurst, N. C., Apr. 27-May 2.

Pacific N. W. Conference, ASCE, Seattle, Wash., Apr. 30-May 2.

American Water Works Association, annual meeting, Municipal Auditorium, Grand Rapids, Mich., May 10-15.

Conference on instrumentation in water, sewage and industrial waste treatment, Manhattan College, N. Y. City, May 14.

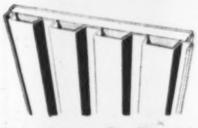
Biennial Inland Empire sewage works school, State College of Washington, Pullman, Wash., May 14-16.

Society of Fire Protection Engineers, Palmer House, Chicago, May 21.

Society for Experimental Stress Analysis, Hotel Schroeder, Milwaukee, Wis., May 20-22.

National Society of Professional Engineers, Sheraton-Beach Hotel, Daytona Beach, Fla., June 18-19.

American Society for Engineering Education, annual meeting, University of Florida, Gainesville, June 22-26.



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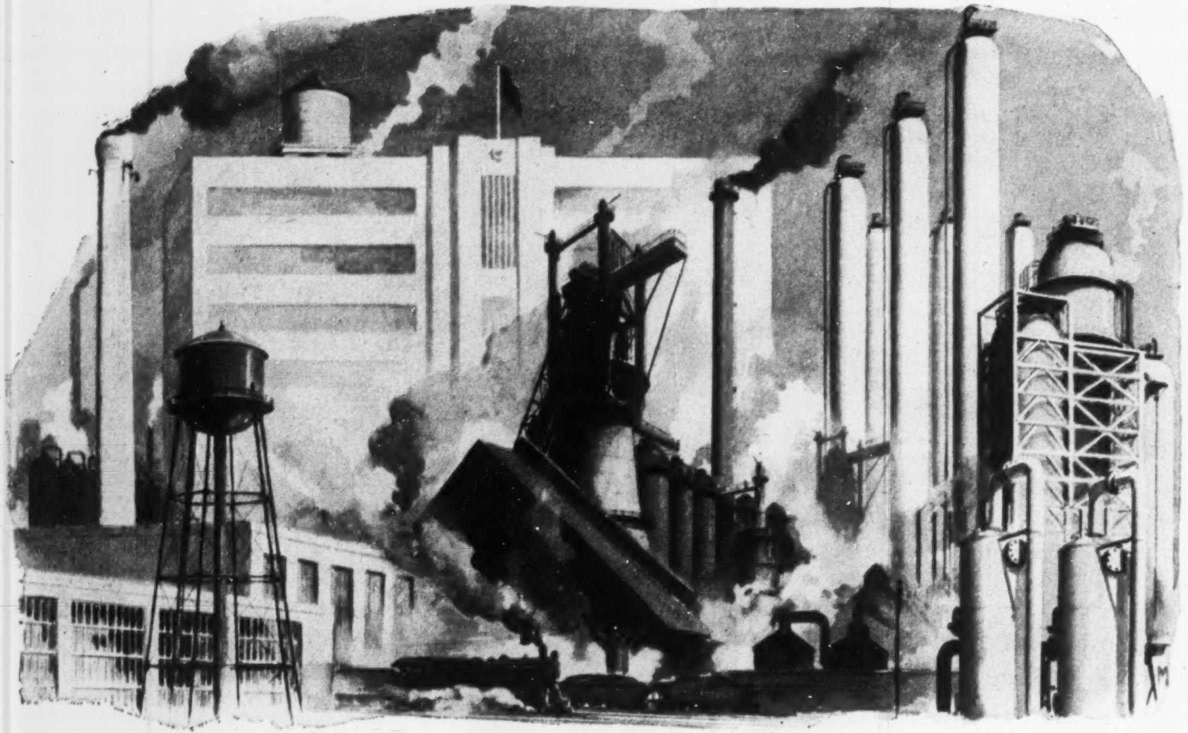

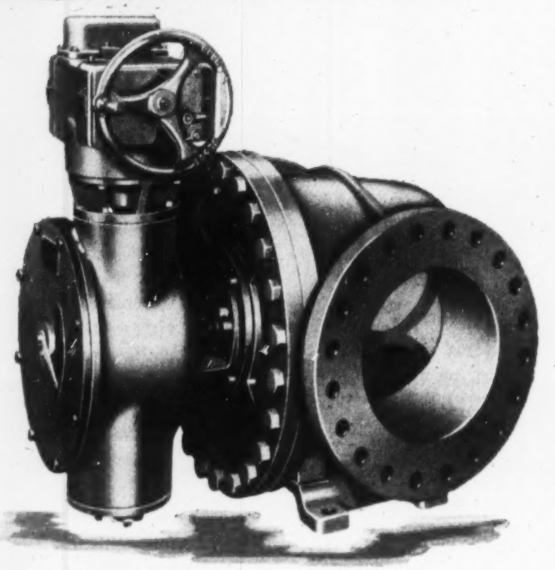

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THE CONSTRUCTION WEEK

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- **Second thought on slums**—New thinking on slum clearance is evident in debate in New York's Board of Estimate over new moves in the city's multi-million-dollar slum-clearance program.

  Up for debate were latest moves—condemnation proceedings—for the $31-million Triborough Houses in East Harlem. The development would include 2,158 units, house 8,100 persons.

  Said second-thinkers (including Comptroller Lazarus Joseph and Council President Rudolph Halley):

  Building such projects on already built-up land is expensive, removes taxable property from city tax rolls, adds expense for services and the city's share of operating costs.

  Remedy: Build on vacant land, finance rehabilitation of existing tenements.

- **Adds sense**—Canada's much-criticized refusal (ENR Sept. 11, 1952, p. 19) of a U. S. bid for use of Yukon River energy for power for a big aluminum plant in Alaska makes more sense, now that plans for a $2-billion development of the same power source (ENR Mar. 12, p. 17) have been revealed.

  Canada's Frobisher Ltd. wants to develop 500,000,000 hp out of the Yukon (through three hydro plants) to power a big smelting and processing operation of its own. That had to be set up before any thought was given to letting some of the power go to Alaska.

- **Fight results?**—One outcome of the current battle over location and ownership of the proposed dam across the Columbia River at Priest Rapids (ENR Feb. 5, p. 27) may be a stronger state power commission.

  The Grant County Public Utility District's plan to build a $412-million dam is being opposed by the Corps of Engineers (which has a prior bid for the site) and the Atomic Energy Commission, which thinks the dam a menace to its Hanford works.

- **Welding code**—The long, hard work of code-making is in sight of its goal, as a 12-man American Welding Society committee considers a draft of a proposed code for welding of reinforcing steel, metal inserts and connections in reinforced concrete.

- **Flood report reaction**—The Kansas legislature this week had before it a violent reaction to the plan (ENR Mar. 5, p. 21) for flood control on the Kaw River submitted by a special flood commission.

  Said the Kansas Reclamation Assn. in a resolution addressed to the legislature: The report surprised its members "to the point of shock." The report ignores recommendations of the state board of agriculture, and agencies of the federal government, takes no notice of soil conservation—would make the Kaw valley a desolate desert.

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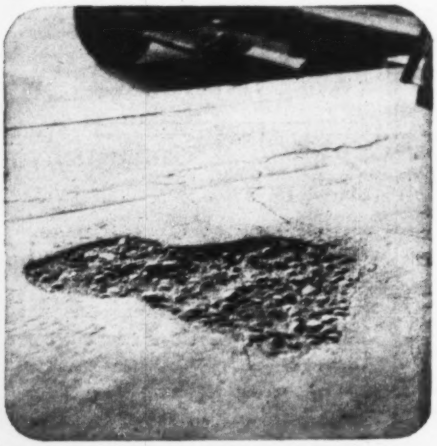
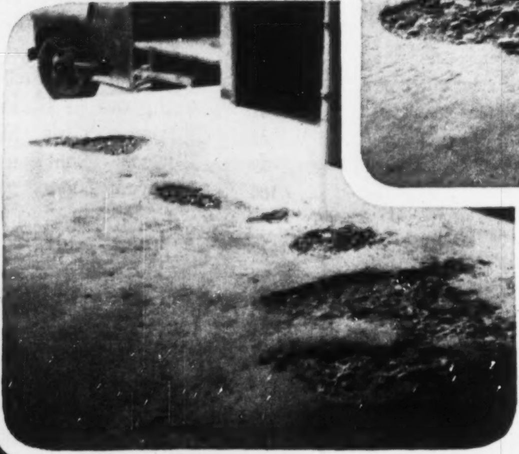
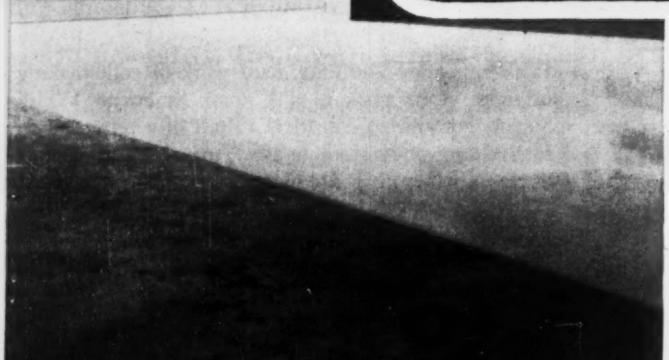


Smaller areas, around large one, is in complete state of disjntegration.



BEFORE

Largest area is 2' long and 18'' wide, 1½'' deep.



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WASHINGTON OBSERVER

Joint Board for Settling Jurisdictional Disputes will be extended for another year on April 1. Specialty contractors have joined the Associated General Contractors in accepting changes proposed by the AFL Building Trades. Chief objective: eliminate friction within Building Trades Dept., give specialty unions and contractors more representation in making decisions, and bring dissident unions and contractor groups back under the plan.

Building trades chief Richard J. Gray won't serve on the joint board—new rules bar Building Trades Dept. officers. Gray helped organize the board in 1948 and will be missed. Other major change: enlarging the board to allow alternates for the four union and four contractor members.

•

Officials all around town are "fighting inflation." In fact, there's so much serious activity of this kind, that a few top officials are watching to see that it doesn't go too far. As yet there are few signs of this—construction activity for the first two months of this year, for instance, was 6% above a year ago.

White House and Treasury experts are wary of the possibility that quick, hard budget-cutting might pull enough props out from under the economy to tilt us into a downturn. If signs of such a slide appear, they want to be prepared to reverse their steps—be ready to use pump-priming construction and tax cuts to keep the slide under control.

•

Some favorable tax changes are in prospect for you this year—even though a tax cut seems more and more remote. Treasury chiefs on their own are planning to ease Bureau of Internal Revenue regulations to let contractors and other businessmen write off new equipment faster (see page 23).

•

St. Lawrence Seaway will come to a vote in the Senate by mid-April. The Wiley bill will let New York State and Canada build power plant, authorize sale of bonds to finance construction of the seaway.

Ex-Sen. Harry Cain of Washington is in line for Federal Housing Administrator under HHFA Administrator Albert Cole. Cain would suceed Franklin D. Richards.

•

Fear of aluminum shortage is causing fight over government proposals to resume stockpiling aluminum. Civilian demand for aluminum—including construction uses—is expected to be one-third higher this year than last. Industry officials say government stockpiling would mean that some private users would go without.

•

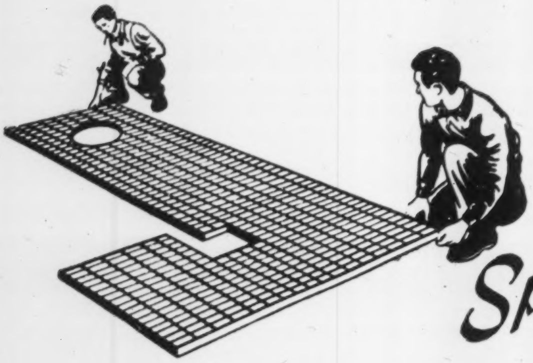
Overseas airbases: Sens. Russell Long and Wayne Morse won't fight the program, despite their recent highly critical report. They've had a change of heart, now say only that we should staff the bases with only enough men to keep them in standy-by condition.

The government-owned Oak Ridge and Handford communities are going to be sold. Atomic plant workers will get first crack at buying the houses. Commercial property will go to the highest bidder. The Atomic Energy Commission has asked the President and Congress to make the sales possible. AEC will keep the community at Los Alamos, the weapon center, for the sake of security.

•

Construction of pilot plants for atomic power is in sight. Atomic Energy Commission expects to ask Congress for money this year to finance plants of varying design. They'll cost about $10 million each.

It adds up to new business for contractors. Building of plants to make bomb materials is about finished. Savannah River and Portsmouth, Ohio, likely will be the last plants put up.



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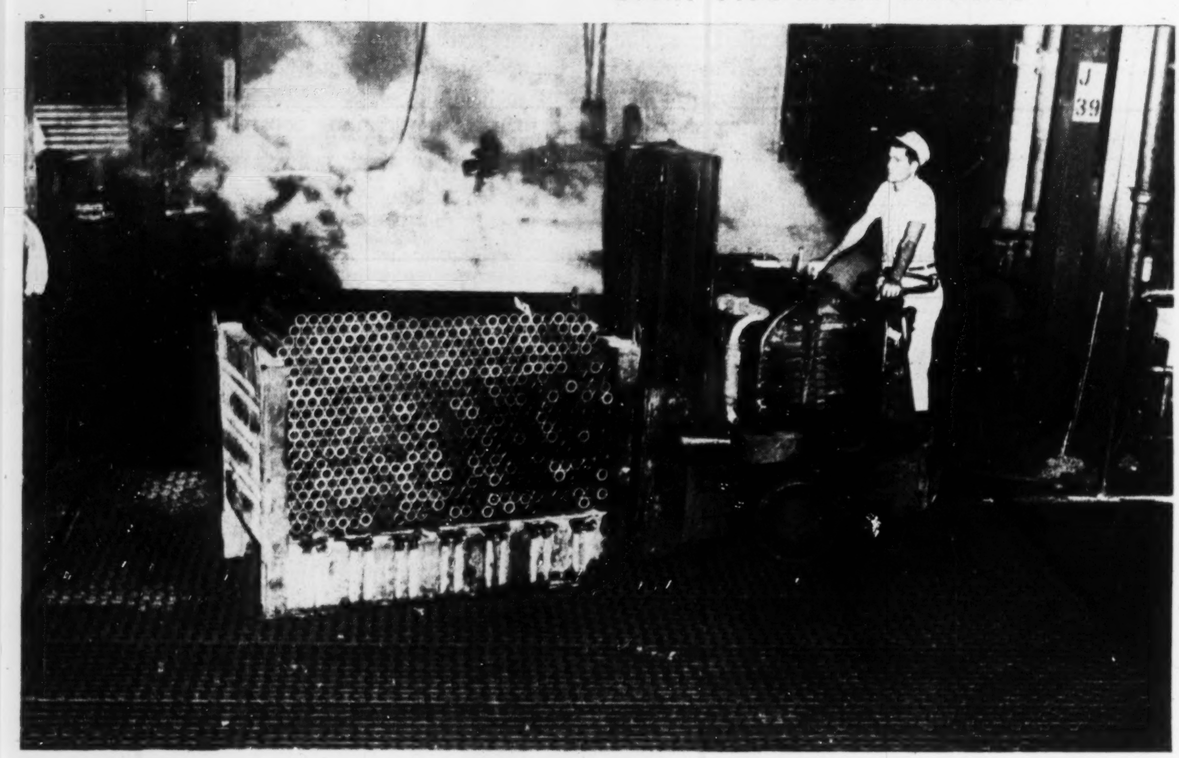

BORDEN SERRA-CRIMP grating has been especially designed to provide safe footing in places where the gratings are subject to excessive dampness, oil or grease. The crimp bars are serrated and raised slightly above the top surfaces of the bearing bars — providing positive footing at no decrease in strength. Shown above **BORDEN SERRA-CRIMP** grating in use in an area which had previously been very wet due to a tubing cleaning operation. Roadway type design supports weight of a loaded fork truck. *Photograph courtesy Tube Turns, Inc., Louisville, Kentucky.*

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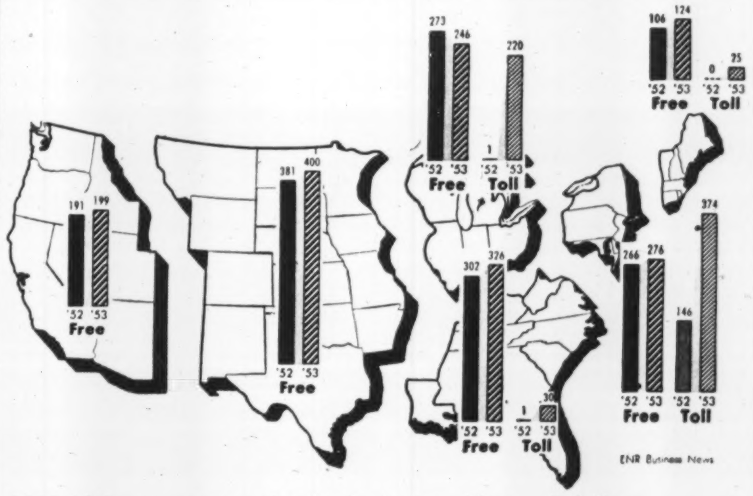


1953 highway construction budgets, in millions of dollars

'53 highway budgets exceed last year's record by 34%

Toll projects boost road building outlay—ENR survey indicates easing of most materials bottlenecks

Highway contracts to be let this year will add up to $2.2 billion, a 34%-increase over last year's all-time high, according to ENGINEERING NEWS-RECORD's annual survey.

State highway departments are scheduled to contract for $1.5 billion in new construction—3% over the 1952 figure. Another $658 million—compared with $148 million last year—has been budgeted for toll roads by turnpike authorities. (See table on following page.

Road building by state highway departments would have been up 9% this year, if a proposed New York state program of $160 million had not been cut back to $70 million in the budget recently presented to the legislature.

• Toll road boom begins—State highway departments will spend $531 million for maintenance of their roads this year. Of this amount, $50.8 million will be done by contract, or about the same proportion as last year.

Although the toll road looms large in the highway picture this year, it may represent only a modest beginning if even a small proportion of the schemes introduced into state legislatures this year should materialize. About half the 44 state legislatures now in session are confronted with toll highway proposals (ENR Jan. 8, p. 24, Feb. 12, p. 24).

Three states account for the bulk of the funds budgeted for toll road construction by nine turnpike authorities this year. They are New York, $230 million; Ohio, $220 million, and New Jersey, $100 million.

• Supply outlook analyzed—State highway departments have budgeted $39.4 million for purchase of new equipment this year—10% less than in 1952. This, however, is only for equipment used by highway department forces for maintenance of their roads.

Most state highway and toll authority officials are counting on adequate supplies of cement and reinforcing steel but are pessimistic over getting an adequate amount of structural steel for their bridge construction.

Ohio's state highway department reports the only current critical cement shortage. But, this is part of an inevitable materials and manpower shortage because of the impact of the billion-dollar atomic energy project at Portsmouth and the 241-mi toll highway project.

"Still, we anticipate being able to carry out new construction within the limits of at present available funds", reports Samuel O. Linzell, director of the state highway department.

Eleven states report a moderate cement shortage and eight are expecting the tight supply situation to persist through the year. Most of the highway departments now getting unsatisfactory deliveries of reinforcing steel anticipate an improvement.

Twelve states term structural steel in critically short supply and 31 others report a below-normal supply. Though 28 highway departments are counting on better delivery schedules later in the year, 15 expressed fear the shortage will continue.

• Engineer shortage critical—The outlook for getting more engineers looked grim all over the country. Twenty-six states reported the shortage of engineers critical and 19 others indicated they were inadequately staffed. At the same time construction labor supply is considered unsatisfactory to some extent in 19 states, with little hope of improvement.

• Legislative proposals mount—Among state highway officials, there is relatively little concern over getting equipment orders filled.

Despite this year's record high budgets for road building, the need for more highway funds is being emphasized with unusual vigor in state legislatures throughout the country. Aside from the multitude of toll road bills, a great variety of financing proposals have been put into the legislative hoppers. Gas tax increases and higher ton-mile levies on trucking are under consideration in a number of states.

Many state highway officials are coming to the conclusion that a more effective and more intensified public education program on the need for highway improvements on a big scale is necessary to get the support required for any increased appropriations.

This was the consensus, for example, at the recent annual meeting of the Mississippi Valley Conference of State Highway Departments in Chicago—where highlight of the 14-state conclave was a panel discussion on "Why Americans have been unwilling to pay for adequate highways."

STATE HIGHWAY PROGRAMS 1952–1953

By State Highway Departments and Commissions

($ thousands, 000 omitted)

	CONTRACTS			MAINTENANCE						Total Construction and Maintenance			New Equipment		
	Put Under Contract	Sched. for Contract		By Own Forces			By Contract								
STATES	1952	1953	%	1952	1953	%	1952	1953	%	1952	1953	%	1952	1953	%
Maine	$13,000	$14,000	+8	$6,500	$6,500	0	0	0	0	$19,500	$20,500	+5	583	500	−14
New Hampshire	7,800	9,014	+16	4,900	4,800	−2	200	100	−50	12,900	13,914	+8	240	213	−11
Vermont	4,800	5,600	+17	4,800	5,302	+10	0	0	0	9,600	10,902	+14	144	150	+4
Massachusetts	62,000	65,000	+5	14,810	14,810	0	520	520	0	77,330	80,330	+4	2,110	2,110	0
Rhode Island	7,000	8,000	+14	2,350	2,600	+11	0	0	0	9,350	10,600	+13	125	150	+20
Connecticut	10,900	22,000	+102	8,000[f]	9,270[f]	+16	350[f]	500[f]	+43	19,250	31,770	+65	185[f]	725[f]	+292
NEW ENGLAND	**105,500**	**123,614**	**+17**	**41,360**	**43,282**	**+5**	**1,070**	**1,120**	**+5**	**147,930**	**168,016**	**+14**	**3,387**	**3,848**	**+14**
New York	91,000	70,000	−23	30,000	29,000	−3	0	0	0	121,000	99,000	−18	2,000	2,000	0
New Jersey	16,018[1]	23,147[1]	+45	8,300	8,500	+2	150	200	+33	24,468	31,847	+30	650	650	0
Pennsylvania	120,000	131,047	+9	31,534	35,000	+11	0	0	0	151,534	166,047	+10	1,500	1,500	0
Maryland	26,003	28,000	+8	5,709	5,823	+2	0	0	0	31,712	33,823	+7	839	1,043	+24
D. C.	3,500	14,000	+300	900	1,050	+17	900	1,000	+11	5,300	16,050	+203	91	92	+1
Delaware	9,000	10,000	+11	2,400	2,500	+4	500	500	0	11,900	13,000	+9	80	90	+13
MIDDLE ATLANTIC	**265,521[1]**	**276,194[1]**	**+4**	**78,843**	**81,873**	**+4**	**1,550**	**1,700**	**+10**	**345,914**	**359,767**	**+4**	**5,160**	**5,375**	**+4**
Virginia	26,000	30,000	+15	4,500[6]	5,500[6]	+22	3,500	4,000	+14	34,000[6]	39,500[6]	+16	2,381	1,750	−27
West Virginia	18,000	15,000	−17	14,000	14,000	0	2,000	2,000	0	34,000	31,000	−9	100	70	−30
North Carolina	38,500	40,000	+4	28,000	29,500	+5	0	0	0	66,500	69,500	+5	3,000	2,500	−17
South Carolina	22,360	22,000	−2	8,500	8,500	0	1,500	1,500	0	32,360	32,000	−1	1,100	750	−32
Georgia	38,101	45,000	+18	7,275	8,000	+10	0	0	0	45,376	53,000	+17	1,985	2,000	+1
Florida	33,500	46,881	+40	9,700	9,637	−1	0	0	0	43,200	56,518	+31	1,000	125	−87
Alabama	11,000	14,000	+27	7,250	7,300	+1	150	160	+7	18,400	21,460	+13	2,055	1,500	−27
Mississippi	17,853	22,000	+23	4,685	5,140	+10	0	0	0	22,538	27,140	+20	370	580	+57
Louisiana	34,370	30,000	−13	14,727	15,700	+7	400	300	−25	49,497	46,000	−7	600	500	−17
Kentucky	31,700	31,000	−2	13,500	15,250	+13	0	0	0	45,200	46,250	+2	369	750	+103
Tennessee	31,000	30,000	−3	6,700	6,700	0	0	0	0	37,700	36,700	−3	2,000	0	−100
SOUTHERN	**302,384**	**325,881**	**+8**	**118,837**	**125,227**	**+5**	**7,550**	**7,960**	**+5**	**428,771**	**459,068**	**+7**	**14,960**	**10,525**	**−30**
Ohio	41,602	45,000	+8	22,485	22,000	−2	7,035	7,500	+7	71,122	74,500	+5	1,346	1,425	+6
Indiana	30,000	30,000	0	10,000	10,000	0	0	0	0	40,000	40,000	0	0	0	0
Illinois	96,893	93,200	−4	18,150	22,000	+21	2,650	3,200	+21	117,693	118,400	+1	2,100	2,050	−2
Wisconsin	47,000	35,000	−26	8,225	8,300	+1	1,201	950	−21	56,426	44,250	−22	0	0	0
Michigan	58,000	43,000	−26	4,300	4,600	+7	12,000	12,700	+6	74,300	60,300	−19	540	600	+11
MIDDLE WEST	**273,495**	**246,200**	**−10**	**63,160**	**66,900**	**+6**	**22,886**	**24,350**	**+6**	**359,541**	**337,450**	**−6**	**3,986**	**4,075**	**+2**
Minnesota	33,000	33,000	0	13,084	11,600	−11	3,000	2,500	−17	49,084	47,100	−4	743	600	−19
Iowa	38,300	18,000	−53	5,200	5,800	+12	2,800	2,800	0	46,300	26,000	−43	1,000	1,000	0
Missouri	36,774	50,000	+36	14,297	15,500	+8	0	0	0	51,071	65,500	+28	1,707	1,975	+16
Arkansas	19,200	20,000	+4	8,000	8,000	0	0	0	0	27,200	28,000	+4	318	750	+136
North Dakota	10,800	11,000	+2	4,900	4,500	−8	0	0	0	15,700	15,500	−1	260	250	−4
South Dakota	12,313[2]	14,500	+18	4,338	3,937	−9	1,200	1,200	0	17,851	19,637	+10	474	500	+5
Nebraska	7,727[3]	4,535[4]	−41	7,470	7,000	−6	1,196	2,000	+67	16,393	13,535	−17	604	670	+11
Kansas	30,712	32,000	+4	8,048	8,950	+11	2,464	2,500	+1	41,224	43,450	+5	735	829	+13
Oklahoma	35,080	44,658	+27	9,338	3,286[5]	−65	262	0	−100	44,680	47,944	+7	800	800	0
Texas	102,000	106,000	+4	23,000	24,000	+4	0	0	0	125,000	130,000	+4	3,400	2,600	−23
Montana	10,511	11,884	+13	6,457	6,370	−1	425	575	+35	17,403	18,829	+8	441	400	−9
Wyoming	9,500	11,500	+21	2,500	3,000	+20	0	0	0	12,000	14,500	+21	500	500	0
Colorado	21,000	26,000	+24	3,085	3,655	+18	0	0	0	24,085	29,655	+23	687	393	−43
New Mexico	14,500	16,500	+14	3,837	4,184	+9	1,225	1,066	−13	19,562	21,750	+11	600	550	−8
WEST OF THE MISSISSIPPI	**381,417**	**399,577**	**+5**	**113,564**	**109,782**	**−3**	**12,572**	**12,641**	**+1**	**507,553**	**522,000**	**+3**	**12,269**	**11,817**	**−4**
Idaho	10,500	16,000	+52	2,700	3,390	+26	1,500	910	−39	14,700	20,300	+38	400	400	0
Utah	11,057	11,000	−1	3,743	3,500	−6	0	0	0	14,800	14,500	−2	733	702	−4
Arizona	12,927	14,000	+8	1,950	2,150	+10	0	0	0	14,877	16,150	+9	365	400	+10
Nevada	7,087	10,585	+49	1,800	1,955	+9	268	200	−25	9,155	12,740	+39	223	250	+12
Washington	33,000	41,000	+24	9,500	10,000	+5	0	0	0	42,500	51,000	+20	0	0	0
Oregon	31,200	24,000	−23	9,300	9,300	0	1,700	2,000	+18	42,200	35,300	−16	1,235	1,100	−11
California	85,114	82,416	−3	22,630	24,000	+6	370	0	−100	108,114	106,416	−2	1,400	1,000	−29
FAR WEST	**190,885**	**199,001**	**+4**	**51,623**	**54,295**	**+5**	**3,838**	**3,110**	**−19**	**246,346**	**256,406**	**+4**	**4,356**	**3,852**	**−11**
UNITED STATES, FREE	**1,519,202[1]**	**1,570,467[1]**	**+3**	**467,387**	**481,359**	**+3**	**49,466**	**50,881**	**+3**	**2,036,055**	**2,102,707**	**+3**	**44,118**	**39,492**	**−10**

CONSTRUCTION PROGRAMS, TOLL ROADS,

By Turnpike, Parkway, Thruway Authorities or Commissions

	CONTRACTS			MAINTENANCE						Total Construction and Maintenance			New Equipment		
	Put Under Contract	Sched. for Contract		By Own Forces			By Contract								
STATES	1952	1953	%	1952	1953	%	1952	1953	%	1952	1953	%	1952	1953	%
Maine	0	25,000	......	150	150	0	0	0	0	150	25,150	+16,767	5	25	+400
NEW ENGLAND	**0**	**25,000**	......	**150**	**150**	**0**	**0**	**0**	**0**	**150**	**25,150**	**+16,767**	**5**	**25**	**+400**
New York	136,000	230,000	+69	0	0	0	0	0	0	136,000	230,000	+69	0	0	0
New Jersey	8,431	100,000	+1,086	0	0	0	0	0	0	8,431	100,000	+1,086	0	0	0
Pennsylvania	1,685	38,805	+2,203	0	0	0	0	0	0	1,685	38,805	+2,203	0	0	0
Delaware (State)	0	5,000[7]	......	0	0	0	0	0	0	0	5,000[7]	......	0	0	0
MIDDLE ATLANTIC	**146,116**	**373,805**	**+156**	**0**	**0**	**0**	**0**	**0**	**0**	**146,116**	**373,805**	**+156**	**0**	**0**	**0**
West Virginia	200	30,000	+13,536	0	0	0	0	0	0	200	30,000	+13,536	0	0	0
Mississippi	794[7]	9,200[7]	+1,059	0	0	0	0	0	0	794[7]	9,200[7]	+1,059	0	0	0
SOUTHERN	**994**	**39,200**	**+3,844**	**0**	**0**	**0**	**0**	**0**	**0**	**994**	**39,200**	**+3,844**	**0**	**0**	**0**
Ohio	1,163	220,000	+18,816	0	0	0	0	0	0	1,163	220,000	+18,816	0	0	0
MIDDLE WEST	**1,163**	**220,000**	**+18,816**	**0**	**0**	**0**	**0**	**0**	**0**	**1,163**	**220,000**	**+18,816**	**0**	**0**	**0**
Oklahoma	4,000	n. a.	—	0	200	....	0	0	0	4,000	n. a.	—	120	60	−50
WEST OF THE MISSISSIPPI	**4,000**	**n. a.**	—	**0**	**200**	....	**0**	**0**	**0**	**4,000**	**n. a.**	—	**120**	**60**	**−50**
TOTAL TOLL	**148,273**	**658,005**	**+344**	**150**	**150**	**0**	**0**	**0**	**0**	**148,423**	**658,155**	**+343**	**125**	**85**	**−32**
TOTAL FREE & TOLL	**1,667,475**	**2,228,472**	**+34**	**467,537**	**481,509**	**+3**	**49,466**	**50,881**	**+3**	**2,184,478**	**2,760,862**	**+26**	**44,243**	**39,577**	**−11**

[f] fiscal year

[1] N. J. 1st half only

[2] Plus $4,811 for bridge & access road, 100% fed

[3] Incl city-co-fed fund proj put under contract by state

[4] Incl only proj financed with state & fed funds

[5] bit & conc repairs only

[6] $30,000 more spent 1952 for secondary & primary highway maintenance, $31,500 est. for 1953

[7] State Highway Dept.

Professional licensing laws attacked

Colorado courts throw out both engineers' and architects' licensing laws—Connecticut considers amendments—New York delays action on corporation practice

Colorado courts this week had declared unconstitutional that state's laws regulating engineers and land surveyors and architects, as attacks on provisions of state licensing laws appeared to be on the increase.

In New York State, where the controversial Bennet-Carlino Bill (ENR Mar. 12, p. 21) was being hotly debated, upper and lower state legislature committees were still debating reports on the measure as the week started. The new bill would amend the 35-year-old existing law to permit corporate practice of professional engineering by corporations formed since the original law went into effect.

And in Connecticut, the state legislature had before it two bills—one affecting the practice of architecture, and the other engineering.

• **Colorado decisions**—The two rulings in Colorado apparently left the state with no laws at all to govern the practice of engineering or architecture.

One ruling—on engineers and land surveyors—was handed down by the state Supreme Court; the other—on architects—came from a district court. Both decisions declared the laws unconstitutional on the basic ground that they delegate illegal legislative powers to state commissions.

In tossing out the engineers' law, the Supreme Court said that action by the State Board of Examiners for Engineers and Land Surveyors to classify engineers as to specific branches of their profession is illegal assumption of legislative powers.

The case was said by local observers in Denver to be a clear-cut victory for Kenneth A. Heron, Denver mining, hydraulic and structural engineer, who waged a four-year legal battle to prevent the state board from issuing rosters and licensing cards showing that he was "especially qualified to practice in the branch of civil engineering. Heron argued that this was a "qualified limitation" and demanded that his name be carried on the board's records as a "professional engineer," without qualification.

The Supreme Court, upholding a Denver district court decision, ruled that a 1951 amendment authorizing the state board to classify engineers was unconstitutional also on the ground that it deprived Heron of a "valuable right" (to the listing as "professional engineer") without due process of law.

"No definition of any particular branch of engineering is contained in this statute, and no standards are fixed . . . by which a classification could be made," the court commented. "Without standards fixed by law, the discretion to declare what the law is is delegated to the board. This cannot legally be done."

• **Architects' law**—The ruling of the district court in Denver on the architects' licensing law climaxed an involved court fight that started almost exactly a year ago.

Then James H. Johnson of Lakewood, Colo. filed suit against the State Board of Architect Examiners on the ground that he had been denied license by the board. Seven similar suits were filed subsequently. One of these subsequent suits—filed by Nat Sachter, 33-year-old Denver engineer, who claimed he had been refused architect's license on "arbitrary grounds"—was the basis of the court's decision.

Justice William A. Black of the district court based his decision on the legal ground that the 1909 law lacks "standards and requirements" for architects.

• **New laws up**—The Colorado court decision added a new phase to a legislative fight already in progress over two versions of a new architect licensing law.

One measure, backed by architects already licensed would require that the board of examiners be constituted of five architects, as at present. It would also grant the board broad authority in examining powers. The other measure—backed by many of those who unsuccessfully have sought licenses—would create an examining board of three architects, an engineer and a public member; would grant architect's licenses to persons who do not have degrees in architecture, if they have been "employed, engaged or experienced" for not less than six years in the office of an architect qualified or registered in Colorado.

• **Connecticut problems**—In Connecticut, two amendments to existing law—one affecting professional engineering, the other architecture—had been dropped into the legislature's hopper.

The architecture measure (HB 210) would amend the present law to permit—among other things—the practice of architecture by a professional engineer, and performance by professional engineers of architectural work that may be incidental to their engineering work.

The other measure (HB 1421) would permit corporate practice of professional engineering, if the chief executive officer of the corporation is a licensed professional engineer.

• **New York**—In Albany, the Assembly Rules Committee and the Senate Education Committee were still wrestling with an amendment to the state's law that would permit corporate practice. The committees were expected to report the bill out for vote this week.

Meanwhile, Assemblyman Joseph F. Carlino, of Nassau County, speaking in favor of the amendment of which he is co-sponsor, told legislators that in New York City alone, more than 315 engineering corporations have been operating, and are now forced out of business by provisions of the existing law.

Attempt to halt concrete bids in Ohio fails

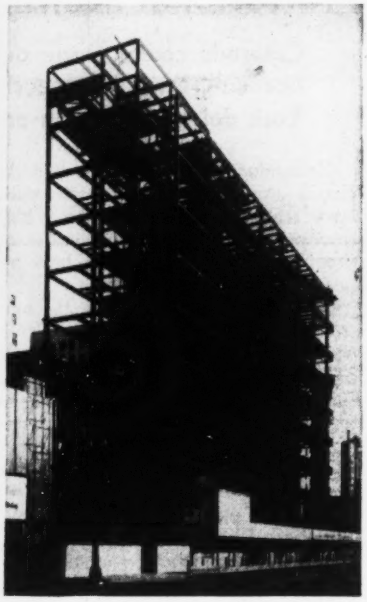
Asphalt interests were rebuffed last week in their efforts to keep the Ohio Turnpike Commission from advertising for bids and awarding contracts for concrete paving until a pending court decision has been rendered.

Ohio's Second District Court of Appeals declined to act on a request for a temporary injunction until it has heard arguments on the report of a court referee, which held that the turnpike commission is obligated to take competitive bids for both asphalt and concrete work on the 241-mi toll road (ENR Feb. 26 p. 21, March 5 p. 24).

The injunction was requested by Richard H. Shafer, president of the Ohio Road Improvement Co., who brought the suit against the commission on behalf of the asphalt interests. Shafer had asked the Appellate Court either to enjoin the turnpike commission from letting any more contracts excluding asphalt pending the court's decision, or order the commission to let asphalt bids.

Despite the referee's findings in favor of admitting both asphalt and concrete bids, the turnpike commission is going ahead asking bids for concrete only. It plans to open bids on four sections of the turnpike totaling 16.8 mi this week and on five sections totaling 21.1 mi April 1.

A court ruling upholding the referee's findings would cripple turnpike construction this season seriously. It would be necessary to withdraw the contracts already let and recall those issued, and to revise specifications to include asphalt.



STEEL FRAME CONSTRUCTION (above) is far from a rare sight in Dallas, Texas, which is experiencing a near-boom in office building. Sixteen buildings have been erected at a cost of $30 million since 1945. Future plans call for $51 million worth of construction which will provide a total of 3,400,000 sq ft of rentable space.

NEW BUILDING for the Standard Federal Savings and Loan Assn. of Los Angeles is one of the few new, tall office buildings which are being built on the West Coast at the present time.

Potential demand for big-city office space is running high

ENR survey shows scarcity of construction due to prohibitive building costs and parking problems

Existence of high potential demand for new office space is pointed up in an ENR survey which shows an average occupancy rate of 97% in major downtown office buildings in 15 key cities. And, in several cities the rate is well over 99%.

With a few exceptions, the cities surveyed had little or no major office-building under way or even planned. Realtors are unanimous in blaming this on high construction costs. As an architect in Cleveland put it, "The real factor is that going rental rates simply do not justify construction of new office buildings."

Speculative office-building ventures inevitably have become rare in most cities. Current construction is almost entirely for owner occupancy and prearranged tenancy. Insurance companies are the principal source of capital but are also the principal tenants of many of the new structures.

• Parking is handicap—Another factor dampening the enthusiasm for shiny new offices is the downtown parking dilemma that plagues most cities. Little has been done to require parking facilities with each new building, and many city building codes still prohibit garaging in buildings.

New York and Dallas are exceptions to the let-down in office-building construction that characterizes most of the cities surveyed.

Dallas has been experiencing the closest thing to a boom and now looks as though it might outbuild its needs, which only a year ago were termed by its Chamber of Commerce "the most critical in 20 years." Sixteen multiple-story structures completed since 1945 at a cost of $30 million have added 1,600,000 sq ft to the city's office space. Other buildings now under construction or for which plans are being drawn will provide another 1,800,000 sq ft of net rentable space at a cost of about $51 million. Among these will be a 50-story structure.

Says Dallas real-estate man Thomas C. Hudson: "Office space is now abundant in this city. Already there are vacancies in new construction and heaven knows where we'll get the tenants to fill the buildings now going up or on the drawing board."

• Manhattan keeps going—Construction is keeping New York City a jump ahead of an occupancy rate of 99.7% as of last May. Five new buildings under construction will bring in 1,700,000 sq ft of space by early 1954, including four structures averaging 25 stories. Plans have been filed for 11 other Manhattan build-

OCCUPANCY RATES AND PREVAILING RENTALS IN 10 CITIES

City	%	Dollars per sq ft per year
Boston	96	2.50 to 3.00
New York	99.3	4.50 to 8.00
Chicago	97.15	3.50 to 6.00
New Orleans	99.5	3.50 ±
Louisville	99	3.50 ±
Detroit	95.6	3.00 to 6.00
Cincinnati	96	3.50 to 4.50
San Francisco	98	3.00 to 5.50
Seattle	97	3.00 to 4.50
Kansas City	97	2.75 to 4.50

ings ranging from 16 to 25 stories, with an anticipated floor area of 4,700,000 sq ft.

New York tenants, particularly, are willing to pay rentals well above the rates prevailing in the rest of the country. Whereas $4.50 per sq ft is the very top figure in other cities covered by the ENR survey, it tends to be the minimum for first-class office space in Manhattan, with some tenants willing to pay as high as $8 for offices in towers. Texans, too, are paying as high as $6 per sq ft for plush office space. And, in Chicago, rates are found to range from the norm of $3.50 to $6.

Air conditioning is no longer considered a luxury by tenants moving into new buildings in New York and Chicago and in the larger Southern cities like New Orleans, Houston, Dallas and Lousiville. In other parts of the country, however, tenants generally are not willing to pay higher rents for this service. Tenants in most cities above the Mason-Dixon Line prefer to purchase and install individual window air-conditioning units rather than pay the higher rents associated with a central air-conditioning system.

• Effects of decentralization—Urban decentralization trends are having an indirect effect on large office-building occupancy and construction. In many places, small buildings are springing up in outlying areas of the city. For example, in Detroit, where no major downtown privately owned office buildings are under construction or planned, there is considerable one and two-story office construction on the outskirts.

Kansas City offers a good example of this trend. Marley Corp., cooling tower engineers and manufacturers, has built a 25,000-sq ft structure right in the heart of the residential section of south Kansas City. Interstate Bakeries put up a building of similar size in the midst of the mid-town apartment belt. Five insurance companies have followed this trend and have built or leased new buildings which are located on the outskirts.

Where the type of business permits, many concerns are locating branch offices in suburban shopping-center developments in preference to expanding downtown office space. Suburban shopping centers likewise are attracting professional men, real estate and insurance brokers and other small business and service enterprises, thus alleviating some of the pressure for downtown office space.

• Conversion possibilities—An outstanding illustration of the "make do" philosophy toward the office-space problem is the tremendous amount of building conversion that has taken place in Cleveland—here more than a million sq ft of centrally located office area has been added without putting up any new buildings.

The top five floors of the 10-story Midland Building Garage, totaling 200,000 sq ft, have been converted to offices. The Cleveland Electric Illuminating Co. joined a building of its own with an old Parcel-Post building, creating attractive, efficient office accommodations.

• Parking ordinances—A good percentage of the large new office buildings are providing parking facilities of some kind, generally as annexes or as detached facilities.

Only two of the cities surveyed—St. Louis and Los Angeles—have ordinances requiring parking provisions for new office buildings, although even here the facilities are not required to be within the buildings.

Most cities have not changed their building codes to allow for garaging within buildings. According to reports from Seattle, the prohibition against garaging in office-building structures is actually responsible for lack of interest in putting up high downtown buildings.

• Chicago blossoms out—Among the important cities included in this ENR survey, which have no extensive office-building construction in view, are Detroit, Cleveland, Cincinnati, Milwaukee, Boston, Los Angeles and Seattle. St. Louis, which is also in this category, has had no new large office building since 1926.

Chicago is only now breaking a 20-year famine in new office facilities. Now under construction is the city's tallest building, the 41-story future home of Prudential Life Insurance Co. This will make a million sq ft of rentable space available in addition to Prudential's own needs.

The occupancy rate in San Francisco has been between 97% and 99% for the past five years. There are practically no vacancies in Class A buildings but they are starting to show up in Class B and C buildings and in the fringe areas. Some big concerns are talking of moving down the peninsula; many are operating inconveniently in several locations.

Yet, only one major building is in view right now. That's the 26-story structure to be built by the Equitable Life Assurance Society of America. The $10-million building will take the last available piece of valuable property in the financial district. The owner will occupy 35,000 sq ft of the 300,000-sq ft space, leasing the remainder.

• New Orleans keeping pace—An acute postwar office-space shortage will be alleviated soon in New Orleans. Completion is expected this year of a 17-story Texaco building with 100,000 sq ft, and work has begun on a 14-story Shell Oil building of 140,000 sq ft. However, developers and business leaders feel that industrial expansion in the New Orleans area foreshadows another tight office space situation in 1955.

Houston has not enjoyed as extensive a boom as its sister Texas city of Dallas. Office space there has been and still is critical, despite a total of 1,500,000 sq ft of space completed since the war. Buildings completed last year and thus far in '53 are 99% occupied. This year's plans include at least three big projects.

Louisville badly needs a 19-story addition on which work is scheduled to begin April 1. This will provide 192,000 sq ft. Present occupancy rate is 99.7%. It is estimated that 200,000 to 300,000 sq ft of office space could be rented easily and, according to the Chamber of Commerce, there is certain need for 100,000 sq ft of Class A space.

Yet, Louisville can't find any interested investors. According to A. J. Stewart, head of the Citizen Fidelity Bank's real estate department, the ratio of obtainable rents to land and construction costs is too unfavorable, in spite of the potential demand as indicated above.

Revision of equipment depreciation rates studied by Treasury experts

Tax relief for contractors—by giving owners of machinery and equipment more latitude in setting depreciation rates—is being studied by Treasury Department experts.

Contractors have long protested that the present formula for depreciation is too rigid. For one thing, it doesn't allow for the rapid deterioration of expensive construction equipment in the early years of its use.

The life of a 20-ton crane, for example, is given in the Treasury Department's Bulletin F, the official guide on depreciation rates, at 12 years. If the usual straight-line method of depreciation is used, it means taking one-twelfth of the total write-off each year. Actually, the equipment loses most of its re-sale value in the early years.

• Hard to get around—If the contractor tries to get around this by using the so-called declining-balance method of figuring the depreciation, he often loses in the long run. Under this system, the rules limit him to a rate of depreciation which is 150% of the straight-line rate. This lets him take a 50% greater deduction the first year, but he can't take that amount each year. The deductions decrease rapidly, because each year the tax base of the equipment becomes less by the amount of all the depreciation taken to date. This means that 20% or more of the equipment's original cost goes unrecovered.

One suggestion for solving this problem is to allow contractors to take the complete write-off over two-thirds of the life of the equipment—in the case of a heavy crane, one-eighth of the total depreciation for eight years instead of one-twelfth over 12 years.

• Compromise favored—There's little support in Treasury circles, so far, for letting owners set their own rate of depreciation—taking the total write-off the first year if they want to. Present thinking favors some sort of a formula to force taxpayers to spread the depreciation out, but the new Treasury officials do not want to give taxpayers more latitude than at present.

The catch in this is that revenue is almost certain to drop in the early years of any liberalized depreciation policy.

Treasury experts think businessmen will gamble on a gradual decline from the present high rates, and crowd any new formulas for all they are worth in the early years. This would mean less taxes for them right away and less revenue for the government.

• Depends on budget—This means that liberalization depends on the over-all budget picture. Balancing the budget is still the Administration's number one economic goal. It comes ahead of any kind of tax reductions, and ahead of tax reforms which would reduce revenues for a period of even a few years.

Pennsylvania Turnpike safety report made

About 85% of the accidents on the Pennsylvania Turnpike are due to human error and the peak in traffic mishaps occurs at speeds between 41 and 50 mph, according to preliminary findings of a long-range research project being conducted by the Turnpike Commission.

The findings were introduced last week into testimony being taken by a joint legislative committee investigating the turnpike's safety measures.

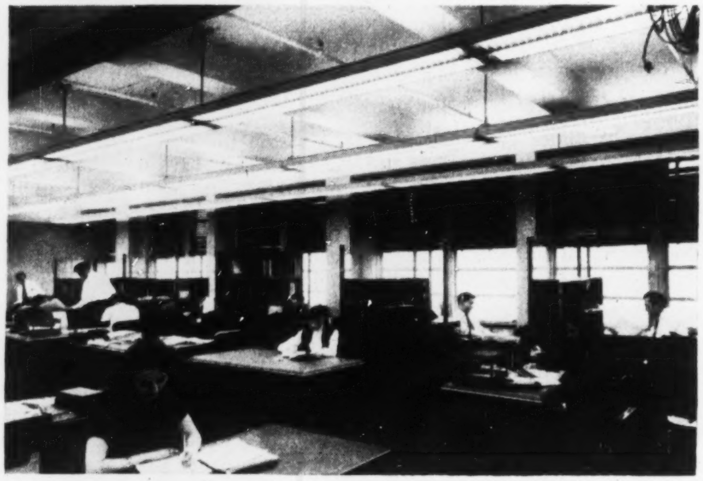
The traffic survey—believed to be the most exhaustive of this nature ever undertaken—is not due to be completed for another year. It is being conducted by a research group formed by the Turnpike Commission last October.

Involved in the study are the Union Switch and Signal Division of Westinghouse Air Brake Co., the J. E. Greiner Co. of Baltimore, consulting engineers to the turnpike, and the American Institute for Research, Pittsburgh.

Preliminary conclusions were based on an analysis of the State Police reports on each of the 6,454 passenger cars and 3,733 commercial vehicles involved in accidents occurring during the 11½ years the turnpike has been in operation.

It was found that less than one percent of the passenger cars involved in accidents were traveling at the top speed limit of 70 mph and, no truck involved in an accident was reported moving at 70 mph.

Accidents involving the median strip—a problem that has been dealt with at length by witnesses appearing at the legislative hearings—accounted for only 8% of the turnpike's traffic mishaps since its opening.



ENR office gets high-level lighting

Remodeling of Engineering News-Record headquarters in the McGraw-Hill Building, New York City, included installation of lighting system that features high-intensity illumination with seeing comfort. Continuous lines of louvered fixtures, each equipped with two 75-w, 8-ft long fluorescent lamps, provide more than 100 ft-c at desk level. Spaced about 6 ft apart, the fixtures throw more than 50% of the light upward, to be reflected from the ceiling. The installation cost less than $1.60 per sq ft. Berlon C. Cooper, associate editor, Electrical Construction and Maintenance, was consultant to the McGraw-Hill Building Corp. on the design.

Also included in the remodeling job were movable modular desk units for the editors. L-shape in plan, equipped with book shelves and glass partitions, the desks form offices of a convenient size.

CONTRACT FOR GAVINS POINT DAM work is signed by Col. H. S. Miller, Omaha District Army Engineer. Looking on is John C. Hays, area engineer in charge of the project. The dam is located about four miles upstream from Yankton on the South Dakota-Nebraska border.

A handy dredge pays off handsomely

Use of "Western Chief" gives low bidders $3-million edge over competitors for Gavins Point Dam contract

"Western Chief"—versatile dredge that made construction history at Fort Randall Dam on the Missouri River in South Dakota—now promises to pay another big dividend to its owner, Western Contracting Corp. of Sioux City, Iowa.

The dredge, it turns out, was chiefly responsible for giving Western and two associated firms a $3-million edge over their nearest competitors in bidding on Stage 2 work on Gavins Point Dam—another Army Engineer project located 100 mi downstream from Fort Randall Dam.

Contract award for continuing work on Gavins Point Dam was made by special authorization of the Secretary of the Army (ENR Mar. 12, p. 27). It is the only large federal construction job to be released to date from the Administration's recent budget freeze order.

The Western group including J. A. Jones Co. of Charlotte, N. C., and Massman Construction Co. of Kansas City, Mo., got the contract on a bid of $17,525,046 as against the next two low bids of $20,570,889 and $20,754,164. The successful bidders were more than a million dollars under the government estimate of $18,765,798.

"Western Chief," the world's most powerful suction dredge, has been standing by at Fort Randall since completing operations there last summer. It will now be floated downstream to go to work chewing away Lewis and Clark's historic Calumet Bluff to make way for the Gavins Point Dam spillway and to cut a downstream outlet channel.

Although the outstanding feature of the dredge is its portability, Western Contracting Co. has come up with an ingenious plan for floating it to its new job. The dredge takes a nine-foot draft and this reach of the Missouri is extremely shallow. The solution: plug sections of the 36-in. spoil pipe and lash them to the hull to buoy it up pontoon-fashion.

"Western Chief" was fabricated in sectional assemblies for use at the Fort Randall Dam project (ENR Dec. 20, 1951, p. 36, Feb. 7, 1952, p. 38). The 1,500-ton dredge has 20 hull sections. Its heaviest piece is a 125-ton section of the ladder. Components were shipped by rail and trucked to the dam site. Assembly was done in a dry pit during the period between November, 1950, and April, 1951 (ENR Aug. 14, 1952, p. 39).

ASCE revises method of distributing papers

The American Society of Civil Engineers has revised its publications distribution system to enable a greater number of technical papers to be issued and to cut the time between acceptance of a paper and its release.

A paper found acceptable by the executive committee of any technical division will not be subjected to further screening at ASCE headquarters but will be typed there for reproduction by photo-offset. Copies will be sent automatically to all members of the division in which the paper originated and will be listed in the society's magazine, "Civil Engineering", as available. Members of other divisions may obtain copies under the existing distribution system, whereby members make specific requests for each published paper.

25-mile water supply tunnel holed through

New York's Delaware water supply was one step closer to completion last week when Walsh Construction Co. holed through on the 25-mi East Delaware Tunnel.

To serve as an outlet for Pepacton Reservoir, the tunnel will be one of two that will bring water to Rondout Reservoir, whence it will go 80 mi southeastward through the Delaware aqueduct to New York City.

The second tunnel, running 5 mi from Neversink Reservoir to Rondout, is substantially complete. Both Neversink and Pepacton Reservoirs are in the Delaware River Watershed.

East Delaware Tunnel work began in December 1949, operations being conducted from both portals and both ways from two shafts. Portal sections were holed through during the past year, last week's closure between the shaft being the final one. The tunnel is scheduled to be completed in the late summer of 1954.

Toll bridge work starts

Quiet, informal ground-breaking ceremonies for an engineering office last week marked the start of the San Rafael-Richmond bridge across the north arm of San Francisco Bay, a sharp contrast to the bitter and noisy controversy over whether or not the bridge should be built at all.

Once the $62 million in bonds were sold and the contracts were let, (ENR Mar. 5, p. 24) the California Toll Bridge Authority swung quickly into the job of getting the work started.

New federal construction projects offer best hopes for budget cuts

Size and flexibility make military programs easier to cut than civil works proposals

Eisenhower budget cutters are searching out the fat that can be cut off government construction programs without hurting the defense effort or running up a bigger final cost for needed projects.

They're finding that cutting construction programs is a tough job. Any real savings have to come out of new starts. And the only agencies with substantial programs of new projects are the military services. Those projects already have undergone close screening and sharp pruning by the Defense Department—before Congress authorized them.

But the sheer bulk of the military construction program does offer opportunity for cuts. Looking at a backlog that totals some $7.5 billion of authorized work—of which about $4 billion has been funded but not yet placed under contract—military budget cutters can find places to use a knife.

Overall military planning has to be kept flexible, and conditions affecting certain projects have changed since the jobs were authorized. Some projects could be dropped, but many of them would have to be replaced with alternate installations. And a number of proposed projects probably could be cut even closer to bare essentials.

• Civil works cuts harder—These possibilities offer a chance for some sizable cuts in presently authorized and funded military construction. The Truman budget estimated nearly $2.6 billion of military construction spending in fiscal 1954. New contract awards, on the basis of present planning, might run close to the same total. Both of those figures can be reduced by sharp budget cutting.

Construction cuts in the government's civil works programs are harder to make. There will be departmental savings through reductions in civilian personnel for such agencies as the Reclamation Bureau, the Corps of Engineers and the Bureau of Public Roads. But cutting the rate of spending on construction is more difficult.

• Looking into airports—Efforts are being made in that direction. Last week, for example, it was reported that the Commerce Department would recommend discontinuing federal aid for new airport projects. But this week the department says that no such shutoff is being recommended and that nothing of the sort would even be considered until Secretary Weeks confers with Budget Director Dodge. A conference is scheduled for late in the week.

Federal aid to highways is a much larger item in the Commerce Department Budget. Congress has authorized highway aid of $575 million a year for fiscal 1954 and fiscal 1955. With some governors demanding full restoration of gasoline taxing power to the states and cessation of federal aid, the prospect here opens wide possibilities for action by Congress and the administration. It is unlikely that the Executive Branch will propose any changes until the Bureau of Public Roads has been revamped by the incoming commissioner (ENR March 12, p. 28).

• Revised civil budgets—Civil departments of the government have submitted revised budgets for fiscal 1954, as requested by Director Dodge (ENR Feb. 12, p. 21, and Feb. 19, p. 43). The revisions show meager savings for the next fiscal year through stopping new projects. The Budget Bureau and the departments are reviewing the various budgets to see where other construction cuts can be made, particularly on jobs recently awarded.

Federal construction rolls ahead without too much impediment except for the freeze on bid advertising in the Defense Department.

New and revised materials standards recommended by ASTM committees

Many new and revised specifications and tests for materials were completed by committees of the American Society for Testing Materials during some 300 technical group meetings conducted in Detroit the week of March 2-6.

Development of a specification for slag cement was authorized at the meeting of Committee C-1 on cement.

• Fly-ash admixture—Proposed specifications for fly ash and for lightweight aggregates in concrete featured the discussions of Committee C-9 on concrete and concrete aggregates. The subcommittee on admixtures recommended acceptance for committee letter ballot of a proposed test method for fly ash as an admixture to portland cement. A proposed specification is being referred back to the subcommittee for further study.

Considerable progress toward development of a complete revision of the existing specifications for lightweight aggregate (C130) was reported by the subcommittee on this subject. It reviewed drafts for three separate specifications, covering lightweight aggregate for insulating concrete, structural concrete and concrete masonry units. Acceptance of these specifications probably will be recommended to Committee C-9 for action at the 1953 ASTM annual meeting June 29.

Three proposed methods of tests for resin cement mortars were approved, subject to letter ballot, by Committee C-3 on chemical-resistant mortars at a New York meeting on March 11.

• Resin mortar tests—Two of the proposed methods are for determining tensile strength and compressive strength of resin mortars. Although these mortars are not usually under tension when in service, it is felt that tension data would be useful for purposes of determining the rate of cure and other significant properties of mortar.

The third proposed method contains procedures for measuring working and setting times of chemical-resistant resin cement mortars with the setting time procedure including both initial and final time of set determinations.

• Concrete reinforcing—Committee A-1 on steel met earlier in Birmingham, Ala. The subcommittee on structural steel has been cooperating with the General Services Administration and the American Welding Society in developing a suitable specification for weldable steel. At present, it was announced, comments are being submitted on Interim Federal Specifications Q-s-00741 and Q-s-741.

A tentative revision to Standard Specification A 185 for welded steel wire fabric for concrete reinforcement was recommended, including the addition of definite weld tests and procedures to limit the weld strength in shear for fabric to a minimum of 35,000 psi, based upon the area of longitudinal wire. In addition a better definition of "maximum average spacing" was recommended for Specification A 305 covering minimum deformation requirements for deformed concrete reinforcement bars.

Atomic labor panel to be reorganized in the midst of many pending disputes

Sudden dismissal order catches officials off-base as panel is put into FMCS awaiting changes

The Atomic Energy Labor Relations Panel that has mediated disputes affecting atomic energy production for the last four years is being reorganized. President Eisenhower, anxious to reduce the number of government agencies, is placing the panel in the Federal Mediation and Conciliation Service and probably will keep some of the same panel members whose resignation he suddenly accepted last week. A final decision is expected this week.

For a while there was considerable concern at the Atomic Energy Commission and in atomic management and labor circles that the panel was being abolished. Perfunctory resignations "at the pleasure of the President" had been on Eisenhower's desk since he took office. Then on March 6 he accepted the resignations, retroactively to Feb. 28, without appointing any successors. This tied the panel members' hands on disputes already before them and left the industry without any panel at a time when several strikes threatened.

• **Reaction**—The AFL Metal Trades Department, whose affiliates represent workers at Oak Ridge, Hanford and other AEC installations, reacted quickly. Its president, James Brownlow, notified the President that the AFL unions would consider themselves released from their no-strike pledge. They gave the pledge when the panel was created in 1949 after a congressional inquiry into the threatened Oak Ridge strike in 1948 and atomic energy labor relations generally. The CIO chemical workers and other unions having agreements with AEC contractors were prepared to follow suit.

The White House apparently had pulled a boner. Secretary of Labor Martin P. Durkin had not been consulted. AEC knew what was coming, but did not concur. White House aide Sherman Adams moved quickly to save the situation and prevent serious damage. He got FMCS chief David L. Cole—whose status as a Truman holdover still is in doubt—to straighten things up.

Cole met with the two chief panel members, Chairman William H. Davis and John T. Dunlop, and the three of them conferred with Durkin. Davis then had a session with Adams. This was followed by a meeting of Adams, Cole and Lewis L. Strauss, former AEC member and new special assistant to Eisenhower on atomic matters. It was decided to keep the panel, but put it in FMCS "for housekeeping purposes."

UNINFORMED of the changes proposed in the Atomic Energy Labor Relations Panel was Secretary of Labor Martin P. Durkin.

Details were to be worked out this week. One of the problems is to make sure that the panel is independent and completely separate from FMCS in its policies and procedures. Reason: The atomic panel makes recommendations in disputes it handles and sometimes acts as arbitrator. Federal Conciliators do not.

• **Troubles**—The panel had just helped settle a wildcat strike of 150 plumbers at Oak Ridge and got a machinists' union picket line off the Hanford project when Eisenhower accepted the resignations. Dunlop was still working on jurisdictional problems at the new construction site at Portsmouth, Ohio, and refusal of teamsters to deliver nonunion gas at Paducah.

Wage negotiations are in progress at Hanford and at the Sandia assembly plant at Albuquerque, N. M., which may require assistance from the panel. Other negotiations are coming up this spring at Oak Ridge and elsewhere.

At the new Rocky Mountain Flats plant, operated by Dow Chemical Co., Denver, Col., the AFL Metal Trades Council beat the CIO in a representation election covering production workers. And the AFL has a petition pending asking for an election at the Savannah River H-bomb plant.

TVA wage agreement draws contractor fire

The recent abolition of the Wage Stabilization Board automatically put into effect, retroactive to Jan. 4, wage increases averaging 5.3% to some 12,000 operating maintenance and construction workers employed by the Tennessee Valley Authority.

A. E. Gaylon, business agent for the Knoxville Building Trades Council, promptly announced that "we feel that our people should have the same rate of increase as was given TVA workers."

The AFL is demanding that this increase be handed to some 25,000 construction workers in 18 area counties. Negotiations got under way between Associated General Contractors and the union but little progress was reported. The contract is slated to expire May 1.

When the increases were first proposed by the TVA local, AGC chapters protested that they did not reflect the prevailing wage scale. TVA maintained that its scales are based in the whole of the TVA area.

• **AGC protest**—C. P. Street, national president of AGC, said in Charlotte, N. C., that "the failure of TVA to operate properly under the law relating to payment of prevailing wage scales is contributing to inflation and is against the best interests of the country."

The AGC position is, he continued, that the TVA, as a government agency, is disobeying the law by paying wage rates higher than those prevailing in the area. Despite the protests four years ago, this practice has continued, he said.

• **TVA defended**—However, speaking at a TVA union-management cooperative conference, Douglas McGregor, college president and Standard Oil industrial relations consultant praised the TVA labor policies.

Supreme Court upholds Labor Department

Fair labor standards apply to "off-the-road" workers producing material for interstate roads

Employees engaged in "off-the-road" work, producing surfacing materials for an interstate highway, are protected by the Fair Labor Standards Act and must be paid time-and-a-half for overtime. Employers also must keep proper employment records for such employees.

That's the ruling announced by the Supreme Court last week upholding an interpretation of the law by Wage-Hour Administrator William R. McComb.

The Alstate Construction Co., a Pennsylvania road contractor, lost its argument that, because the road surfacing material it takes is produced in Pennsylvania for use on Pennsylvania roads, and is not shipped across state lines, these workers are not covered by the federal law. The federal Wage-Hour law covers only workers "engaged in interstate commerce or in the production of goods for interstate commerce."

The Labor Department started the court action to force Alstate to pay time-and-a-half to workers in three plants which were manufacturing a road surfacing mixture that was used by the company.

Most of Alstate's work was done on interstate roads or for companies producing goods for interstate commerce.

- **Amplification**—The court's ruling is an amplification of a prior ruling, that employees repairing interstate roads serve interstate commerce.

"By the same token," said the court, "he who produces goods for these indispensable and inseparable parts of commerce produces goods for interstate commerce."

From 1938 (when the law was passed) until 1945, the Labor Department took a position that such "off-the-road" employees were not protected by the Wage-Hour law. When the decision to switch that interpretation was announced publicly, it aroused a storm of protest from employers and their associations, like the National Sand & Gravel Association. Congress received many suggestions to water down the announced change; but none was adopted.

The court, taking note of this, said it would not "repudiate" an administrative interpretation which Congress refused to change.

A-plant strikes

Construction strikes on atomic energy projects last year caused a loss of 1.6% in potential working time among construction personnel, according to a survey of 1952 strikes by the Atomic Energy Commission.

Paducah, Ky. suffered most. Work stoppages there accounted for 70% or more than two-thirds, of the total construction time lost on all atomic projects. Next was Hanford, accounting for 13% of the loss, followed by Savannah River, 7%. The remaining 10% were scattered among construction operations at Fernald, Oak Ridge, Dana, the San Francisco Bay area, and various locations under the Santa Fe operations office.

The hottest strike spot in the industry—Joppa, Ill.—is not included because it is a private project to service Paducah with power.

Davis-Bacon wage law under new attack in Senate

Further criticism of the administration of the Davis-Bacon "prevailing wage" law covering federal construction came up on the floor of the U. S. Senate last week.

Target of the attack—by Sen. Dwight Griswold (R. Neb.)—was the establishment of wages by the Labor Department for construction of the Gavins Point Reservoir, which touches both Nebraska and South Dakota across the Missouri River.

Griswold charged that rates set by the Secretary of Labor for the $70-million project were 15 to 40 cents an hour higher than any wages paid for skilled and unskilled labor in northeastern Nebraska.

Just a short time before Griswold spoke, a "lame duck" report by the Senate Labor Committee—worked up during the Democratic controlled 82nd Congress—charged the Labor Department, the Corps of Engineers and other federal agencies with lax enforcement of the law. Some contractors, said the report, are still getting government contracts though they violate the wage and other labor standards required on federal construction projects. (ENR Feb. 26, p.28)

During hearings held by the department at Gavins Point, there was no other similar project in the area. So rates were set on the basis of wages then being paid at the Fort Randall Dam project, 50 mi away in South Dakota.

Injunction hits contractor in open-shop dispute

A Louisville, Ky., painting contractor who attempted to establish an open shop on an Oak Ridge, Tenn., house-painting project was ordered, in a temporary injunction, to rehire the 34 union employees who left his employment in the dispute and to discharge the 34 non-union painters he had hired since his open-shop decision.

The injunction against the contractor, Glenn H. Henson, was issued after the AFL Painters and Decorators local 437 had charged that Henson had violated his contract with the union and that his action violated provisions of both the National Labor Relations Act and the Tennessee "open-shop" law.

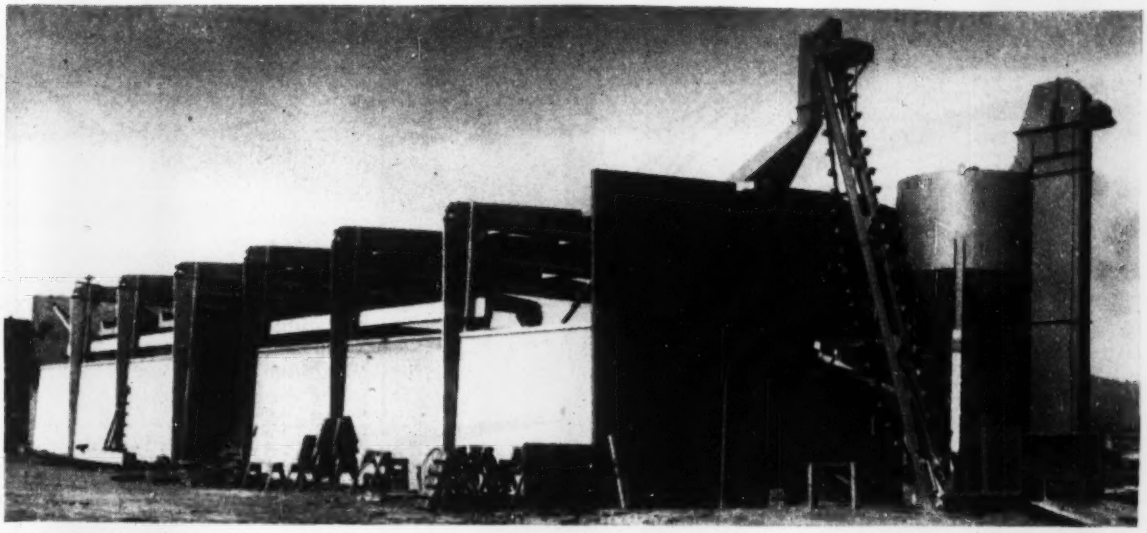
The union charged that 33 union painters and a foreman were fired because they were union members and said that state law prohibits the firing of anyone because of membership or non-membership in a union The union also contended that the 34 non-union painters were apprentices and that the contract called for only three apprentices.

Secondary boycott?

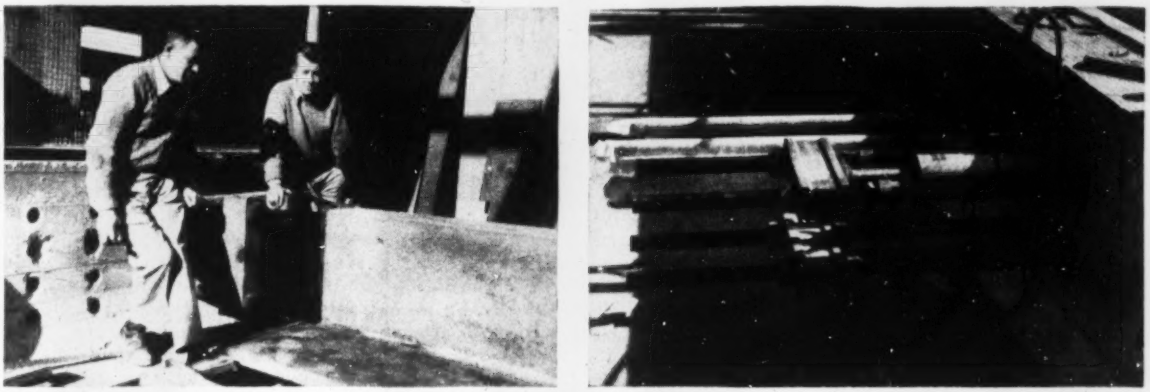
More darkness than light is shed on the question of "when is a secondary boycott a secondary boycott under Taft-Hartley," by a federal court of appeals in Chicago. The court has upheld the National Labor Relations Board ruling in the Joliet, Ill., Contractors-AFL glaziers squabble that:

- **A union rule against working on jobs using preglazed sash is not by itself an unlawful boycott;**
- **Union refusal to refer glaziers to contractors using preglazed sash is not unlawful;**
- **But that where the union rule induces glaziers to stop work when they discover preglazed sash being used on the job, there is an illegal boycott.**

Court says all the union rules and actions against working on preglazed sash accomplish their intended object legally; yet it warns that continued use of the rules by the union "would seem to be a hazard" since they induce secondary boycotts.



CONCRETE PLANT in Tacoma, Wash., was built to fabricate prestressed concrete components for building construction. Roof deck, purlins and girders of the building itself are prestressed.



PRETENSIONING of several planks at one time (photo on left) is being observed by Art (left) and Tom Anderson, founders of the business. Jacks applying the prestress react against a thick concrete abutment (right).

Factory produces prestressed buildings

A PRESTRESSED CONCRETE BUILDING has been built recently in Tacoma, Wash., to produce prestressed concrete elements.

Part of the plant of the Concrete Engineering Co., the new unit was built to demonstrate to skeptical engineers and architects the feasibility of such work, and considerable professional interest is being shown in the project. Features of the structure are roofing planks, 2x20 in. by 25 ft long, and window sash made of prestressed concrete.

Owners of the new business, Tom and Art Anderson, are convinced that prestressed elements can be produced cheaper and better in a factory than on the job—the new building is meant to prove their point. In this regard, they think along the same lines as the owners of Pennsylvania's Concrete Products Company of America, who factory-produce bridge girders as described two months ago in (ENR Jan. 15, p. 5).

Floor slab of the 45x140-ft building is a heavily reinforced mat designed to serve as a casting bed. It has an accurately smoothed surface on which steel forms can be set up in several rows.

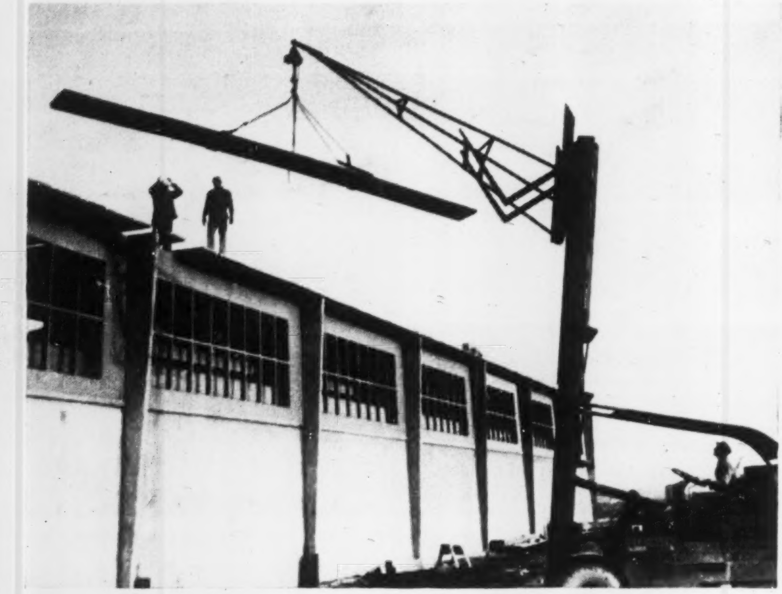
Columns are T-shaped, with the web 5-in. thick and the flange 12-in. wide. Precast reinforced concrete wall panels, 12x19¼-ft by 4-in. thick, are anchored to the columns. These panels are topped by 10x19-ft window casings with 3x4-in. prestressed mullions giving an attractive appearance to the building.

• Prestressed planks—The roof deck is made of prestressed concrete planks. It is supported on prestressed roof purlins notched into the top flange of prestressed roof girders. The 2x20-in. planks are prestressed with 20 No. 8 high-tensile wires tensioned to 160,000 psi.

• Factory product better—According to the Andersons, the prefabricated, prestressed product delivers 50% greater performance than on-the-job prestressing.

This is the result of a closer control of mix and cure, improved forms, higher frequency vibration and greater knowledge of workmen specializing in that particular process.

It was logical, the brothers determined, to set up for factory-produced prestressing and develop an organization specializing in this product. The pattern is similar to that of the fabrication of steel structures, in that members will be cut to size, fitted and made up into units for as-



CONCRETE PLANK, 2 in. thick, but 25 ft long, goes into the roof deck.

sembly right on the building site.

• Experience in Europe—The Andersons, sons of a Tacoma contractor, entered the prestress field by devious routes. Both hold degrees from Massachusetts Institute of Technology and both spent periods in European engineering employment—Tom in Norway and Art in Germany—before World War II.

After the war, while Tom was back in the Pacific Northwest on contracting jobs, Art set up a consulting office in Stamford, Conn., and did research for the Austin Co., the city of Philadelphia, Preload Company, the Venezuelan government, and others.

Visualizing the possibilities of factory-produced prestressed concrete, they returned to Europe together in 1950 and made a thorough study of European methods. With refreshed knowledge, they went home to Tacoma and began construction of their plant.

• Pretensioned products—Along with factory-produced prestressing, the Andersons have adopted the pretensioning method. Tests prove, Art Anderson remarks, that pretensioning, providing a bond between wire and concrete, definitely assures a higher ultimate strength and greater safety factor. In addition, he explains, the necessity of fastening post-tensioned wires at the ends of members by mechanical means would pose difficult problems in thinner prestressed products, such as the 1-in. thick roof planks.

Concrete is allowed to develop a high compressive stress before the pretensioned wires are released. How much, depends on the member. In the case of the thin planks, it is 6,000 psi.

This stress is developed by use of an extremely dry mix with almost no slump. Specially designed external form vibrators are clamped to the steel forms to work the dry mix into place. The electrically driven units maintain a constant frequency of 7,000 rpm.

Anchorage for the wire is provided by rigid concrete abutments at each end of the prestressing line. Tension is applied by hydraulic jacks that react against the abutments.

To maintain accurate control of the concrete, the new firm uses modified beam specimens, 4x4x14-in., rather than standard cylinder specimens. Testing provides information on modulus of rupture and compressive values from each half of the specimens, which are first broken as beams. Experience indicates that more test information is gained by this procedure and the consistency of results is greater than that possible from cylinder specimens.

The Andersons also have been experimenting with different types of high carbon wire having ultimate strengths ranging between 220,000 and 280,000 psi. Prestressing is done with both smooth and stranded wires. Particular attention is directed to such properties as stress-strain relationship, creep of wire at high levels of pretensioning, creep losses of steel after prestressing, and bond between wire and concrete.

Peninsula, moat keep sewer dry

Omer A. Trippel
Asst. Engineer,
City of Cincinnati,
Cincinnati, Ohio

A coffer-dam was a simple approach to dry construction of a sewer syphon in Ohio.

Crossing the Little Miami River at Cincinnati, the sewer consists of two cast iron pipes encased in concrete. The encasement lies in clay, but immediately above was a five-foot bed of gravel, topped by two-feet of water.

Wet pipe-laying and concrete placement were prohibited by the specifications, so some sort of coffer-dam was necessary.

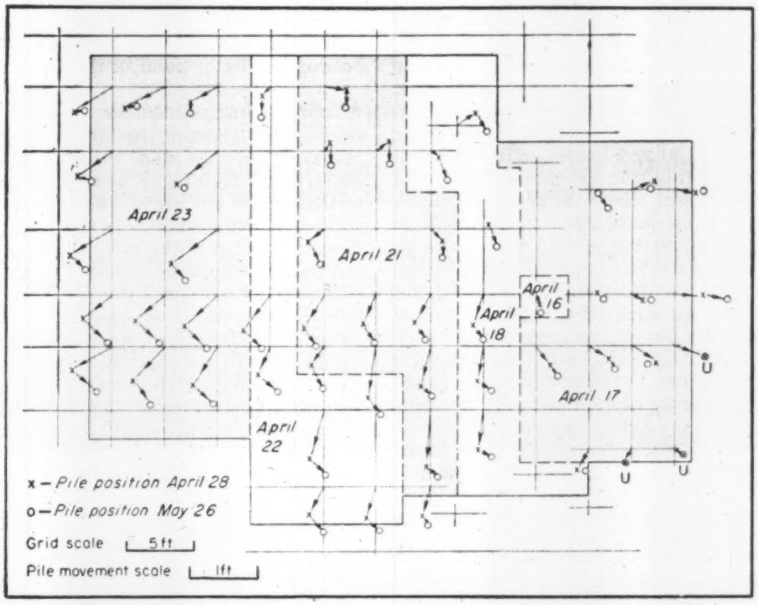
The contractor, Foley Construction Co., decided to build a broad peninsula two-thirds of the way across the river, on top of the pervious gravel bed, then flank the sewer location with intercepting ditches leading to a sump pump. Inside this moat he was free to dig his sewer dry.

Getting clay from the river bank, Foley built his peninsula 170 ft long, 100 ft wide and 2 ft above water level, with a 2-yd dragline and a bulldozer. Compacted by the rolling equipment, the earth made a stable working area. Next, he dug V-shaped intercepting ditches, through the gravel bed and a foot into clay. These ditches led to a sump at the point of the peninsula, where a 6-in. pump discharged drainage to the river. (There was talk of clay-lining the ditch's gravel faces, but it wasn't necessary; the pump easily kept ahead of the seepage.)

Main-ditch excavation, also with dragline, was a trapezoidal cut somewhat below clay level. Ten-foot wood sheets were driven until their tops were roughly at clay level, on lines 7 ft apart. (Longer sheets were used to hold the fill where intercepting ditches converged.) Then the rows of sheets were braced while excavation between them proceeded to a level 4.5 ft below their tops. A small open-joint tile drain, gravel-packed in a V-groove along the bottom centerline, carried riverbank seepage to the sump. The trench then was dry and ready for the siphon.

Cast iron pipes, 16 in. and 20 in., were laid and encased in concrete up to the tops of the sheets, which acted as side forms.

The job was completed by breaching the peninsula near its inshore end and repeating the operation from the other bank. Working time: 30 days.



WANDERING PILES—Foundation plan, with lateral pile movements plotted to five times the plan scale, shows where piles went after they were driven. Origin of arrow indicates location of pile when driven.

The mystery of

The restless substratum

Piles that shifted and subsided, ground that heaved more than piles could have displaced it, core-holes that moved without distortion . . . These conditions were overcome with a "projectile" pile, but their causes remain partly unexplained.

J. H. Thornley
President
Western Foundation Corp.
New York, N. Y.

For unusual and even baffling pile-driving conditions it will be hard to beat a foundation job recently completed in Detroit. A tough upper earth stratum behaved like a blanket over a restless sleeper—the sleeper being a thick substratum of soft clay and boulders that was penetrated by almost 5,000 piles.

Pile lengths were 90 ft to 120 ft, making total footage 500,000. The piles will support a high-lift plant, switch house, weir chamber, filter building and wash water building for the Northeast Station of the Department of Water Supply of the City of Detroit.

The unusual soil conditions were mastered after some experimentation with composite pile types, but the theoretical explanations of various ground actions still are a matter for some conjecture.

• Difficulties foreseen—The designers anticipated the unusual ground behavior before bids were taken.

Pile layout and specifications were drawn up and the job supervised by engineers of the Department of Water Supply of Detroit under the close supervision of L. V. Garrity, assistant chief engineer.

The Bryant & Detwiler Co., of Detroit, was the general contractor and the Western Foundation Corp., installed the piling.

Before reciting data on which job specifications were based, and describing methods developed to meet the difficulties, it would seem well to start in the middle, by outlining four puzzling soil problems.

• Shifting piles—While not the first to be noted, possibly the most unusual of the four strange soil reactions was lateral movement of piles in amounts measured in inches, during a period of three weeks when no work was under way and no superstructure load had been applied either to the piles or to the soil in general. Observations were taken while the work was shut down by strike.

Such movements might have been explained partially had areas in the immediate vicinity of the piles in motion been excavated to greater depths than that of the area in which the piles were driven, and had the movements been toward the deeper areas. However, these lively piles were driven in the lowest part of the entire site and the movements did not take place in a single general direction.

• Subsiding piles—The second puzzle was the subsidence of piles. During the strike, many of the piles not only moved laterally but reversed their previous reaction—that of a slow but long-continued upward movement—and actually subsided. As will be explained later, the pile type and driving method permitted the top section of the pile to move up or down without necessarily affecting the lower-section's bearing in hardpan. A constant check proved that no movements did take place in the hardpan-bearing section.

• Excess ground-heave—The third freak reaction was noted when measurements indicated that a 1,000-sq ft area of the site showed a maximum surface heave of more than 4 ft, though the heave that would absorb the entire volume of soil displaced by the piles in the area should have caused only 2.7 ft of heave if it were uniformly distributed. A 100% heave due to the driving of displacement piles in non-compressible soil is of such rare occurrence that the writer has seen it not more than three times in an experience running to over a thousand piling jobs. But this time the heave did not stop at the 100%-mark—it was 50% better than complete.

• Wandering core holes—The fourth problem needing an answer was posed by the fact that cored holes through the upper tough stratum, when bored 40 ft or more ahead of the driving operations, moved as much as 13 in. without any distortion of the holes themselves.

Perhaps the most puzzling feature of this fourth problem is the fact that no pressure was created in the top stratum, which heaved and settled and moved laterally in many directions, apparently under the influence of movements in the lower soft clays, without itself showing any mud wave or distortion under pressure.

• Three surveys—The four mysterious conditions were not proved by casual observation, nor only by the usual instrument-checking done by the job layout crew. The job layout crew was but one of three agencies that made independent and complete surveys. The second survey, which checked with the first, was made by a field engineering crew of the Department of Water Supply. Even with the double evidence, there were some (including the writer) who remained skeptical. So it was arranged to have Warner & Warner—among the best-known and most dependable of the Detroit surveyors—make complete surveys, working around the clock over week-ends, when no construction operations would interfere. Their results agreed closely with findings of the other two parties.

Many attempts were made to work out a patterned relationship between the order of driving of the piles and the mass soil movements. Ultimately it did become possible to predict to some extent general "area movements" but solutions were strictly empirical and did not follow any known logical theory

• Difficulties foreseen

The piling specifications had been carefully tailored to fit the difficult and unusual soil conditions, as job experience later proved. They were based primarily on the ability of the pile to take 200% of working load with a maximum gross settlement of $\frac{3}{4}$ in. —an unusually severe requirement. All test piles were well within allowed settlement, and met the usual requirements as to stresses in the materials forming the pile shaft. It was further required that the pile be "end-bearing."

However, in addition to these more or less standard requirements, the specifications set up plumb and sweep tolerances that were so severe that one of the bidders on the job stated in his proposal that the requirements were economically impossible of performance and that he would not agree to be bound by them. As events proved, he was right, as far as standard types and methods of piling go.

• "Radius of heave" was key—One other requirement of the specification proved to be a tough one to meet. This was a clause requiring that concrete could not be poured in any pile until it had been established that that pile was outside the "radius of heave."

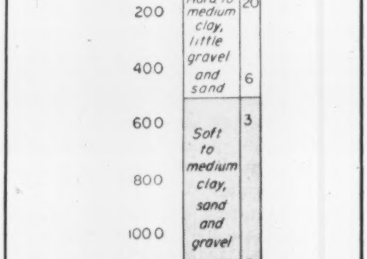
This "radius of heave" proved to be far more extensive than probably had been anticipated by anyone, except perhaps the specification writer. The result was that as many as 2,000 piles at one time were open and unconcreted.

The specification recognized the fact, frequently overlooked, that there are THREE types of heave:

(a) The soil surface itself may heave within a very wide radius, without necessarily causing any movement of the piles. Such a heave, however, probably would affect caps or footings poured on the ground before the affected area had come to rest. Pending actual proof of this type of heave, the specification forbade the pouring of cap or footing concrete within a radius of 250 ft. from the piledriving operations. This would have required the driving of more than half the piles of the job before capping was started. After close observation of job conditions it was decided that cap concrete might be poured safely within not less than 100 ft. of driving operations.

(b) The heaving of the soil may, in the case of cast-in-place piles using a light steel shell as a form for all or part of the shaft of the pile, either cause a stretch in the shell or, in cases where a heavy-pipe lower section and a light-shelled upper section are used in forming the pile, may cause an upward movement of the upper section without causing any corresponding movement in the lower pipe section. It is obvious that if this type of movement took place after the concreting of the pile, the bearing value would be lost even though the point of the pile remained fixed in the bearing stratum.

Under the specifications no pile might be concreted within the maximum radius of heave of the tops of the piles. This radius was to be ascertained by a series of observations during the actual driving operations on the job. It was finally set at 50 ft to 60 ft, depending on local conditions.



Depth
Blows on spoon
El +144.2
Medium sand
8
12
Hard to medium clay, little gravel and sand
20
200
400
6
600
3
Soft to medium clay, sand and gravel
800
1000
8
Fine sand
1200
-38
-200
-700
Clay, sand, gravel and boulders

SAMPLE BORING RECORD shows the "restless sleeper"—the shaded zone. Hard clay above did not distort while moving.

(c) The third type of heave is one causing an upward movement of the bearing section or point of the pile.

• Telltales for point heave—Since it would be impossible to differentiate between this and the (b) type of heave, by observation of the movement of the top of the pile casing only, it was required that tell-tale pipes, going down to the tip of the pile, be placed in a number of piles from time to time. Readings were to be taken on these tell-tales immediately after driving, and periodically thereafter during the driving of piles in the vicinity. A radius of heave would then be established for that general area and if so indicated, all piles in that area would be redriven until they showed a resistance at least equal to the resistance shown on the original drive. The bid form for this job considered the possibility that 3,500 or more of the piles might have to be redriven. An allowance was to be made to the owner for any lesser number of redrives than the 3,500 included in the lump sum of the bid. The tell-tales showed entirely satisfactory results so no areas of redriving had to be established.

However, about 200 piles were retapped to make sure that the soil below the points had not by any chance been loosened by the driving of adjacent piles. All piles were found to be firmly seated. A load test was made on a pile showing the maximum movement. This test showed a net settlement of $\frac{3}{16}$ in. under 100% overload to 100 tons.

• Tough stratum on clay

The sub-surface soil conditions were as follows:

From the cut-off of the piles (El. +118 to El. +126) to an elevation of +100 there was found a stratum of tough, moist clay with occasional sandy pockets and boulders. The degree of "toughness" varied with the moisture content, though there seemed also to be a variation of "density" unrelated to the moisture content. This was indicated by the comparative ease with which the piles could, at some locations, be driven through the tough clay crust, without coring, while at other points driving through the crust, without coring, even with a 24,000-ft lb single-acting steam hammer, required 20 minutes or more of continuous pounding.

• Soft clay—Below this upper tough clay stratum the soil encountered was also a clay, but much moister than that of the top crust. This soft to medium soft clay extended to about elevation +10 where the hardpan was encountered. This clay varied from

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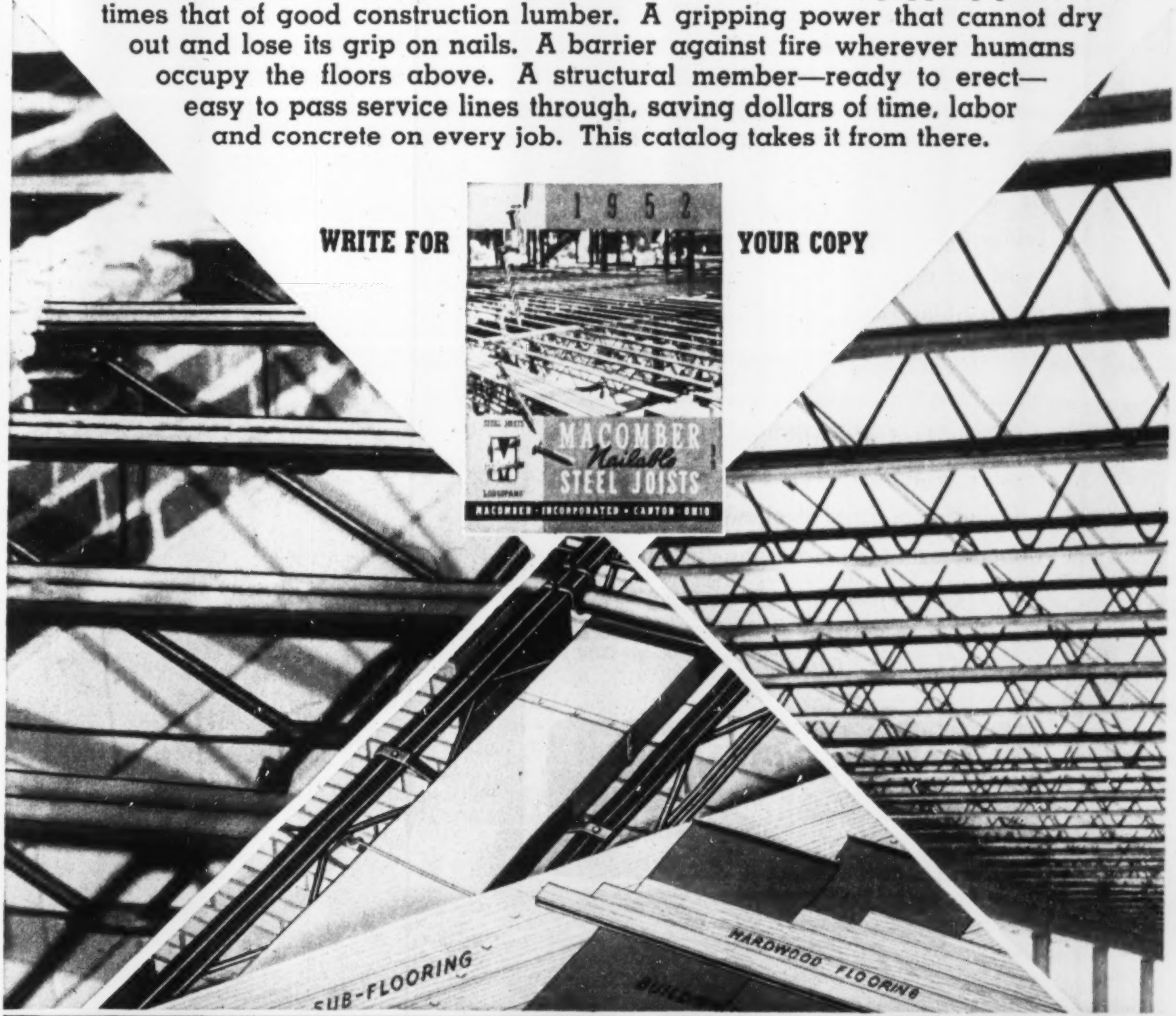

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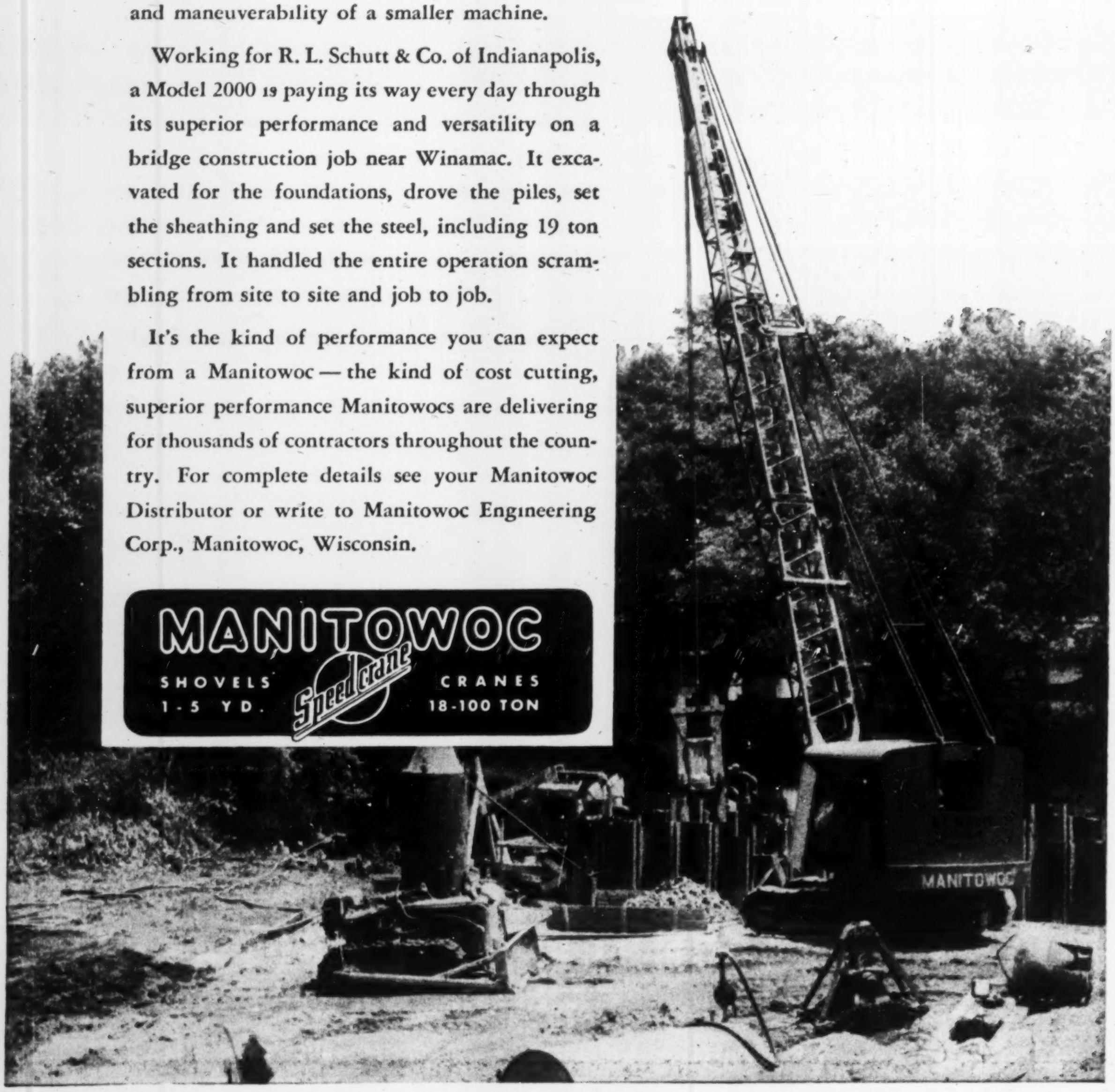
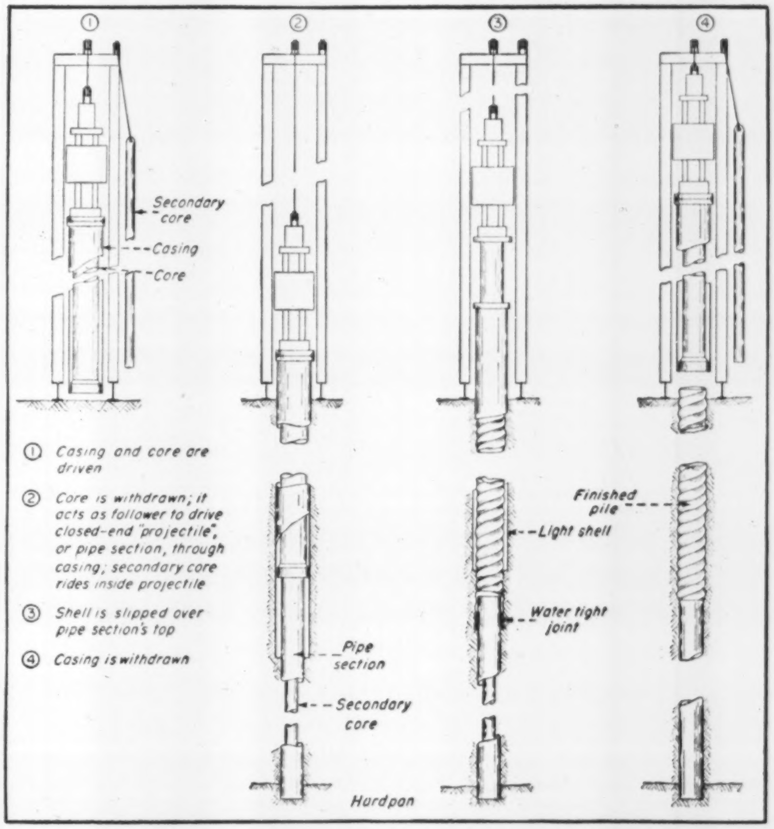


"very soft," as indicated by a free run of the 14-in. driving apparatus under the hammer, to "medium firm" requiring 1 to 3 blows to the inch of penetration when using the heavy hammer. In this soft to medium clay stratum there were numerous boulders and also pockets of sand and gravel.

• **Hardpan**—Below this medium-stiff, pocketed clay, there was a deep layer of hardpan through which piles could not be driven. It was in this hardpan layer that the piles, which under the specifications were to be "end-bearing," developed most of their bearing capacity.

The accompanying boring diagram might be considered "typical," if indeed any one soil boring on a site where variable soil is to be encountered could ever be called "typical."


①
②
③
④
Secondary core
Casing
Core
① Casing and core are driven
② Core is withdrawn; it acts as follower to drive closed-end "projectile", or pipe section, through casing; secondary core rides inside projectile
③ Shell is slipped over pipe section's top
④ Casing is withdrawn
Pipe section
Secondary core
Hardpan
Light shell
Water tight joint
Finished pile

PROJECTILE PILEDRIVING procedure shows steps of method adopted to keep piles straight and watertight in difficult substratum. Secondary core keeps pipe section from getting off line when it hits "floating" boulders.

• "Projectile" pile chosen

For reasons of economy, and in order to meet the then grave shortage of steel in any form, the contractor offered a steel-pipe composite type of pile. This type was approved subject to meeting the various requirements of the specifications.

With the general type of the pile selected, there were still two important decisions to be made: (a) a choice between two general methods of forming composite piles—the "follow down" and the "driven through" or "projectile" method; (b) a choice of the splice between the two elements of the composite pile.

• **Follow-down method**—In the follow-down method—the more widely used of the two—the pipes, wood piles or precast piles forming the lower section of the finished composite piles are driven to ground level first.

After a sufficient number of the bottom sections has been installed, either the same, or a second, driver is equipped with a follower which fits the head of the first driven section. The driving is started and the lower section is forced down to its final bearing position. This follower may carry a shell mounted on the outside or it may be made hollow so that a shell can later be placed through it.

• **Projectile method**—The second method of forming a composite pile—the "driven-through" or "projectile" method—is shown in an accompanying sketch. In this method, a forming apparatus is driven into the ground to some predetermined depth. This apparatus consists of a heavy-walled steel casing pipe carrying within it a core or mandrel having a solid base of such size as to closely fit the inside dimensions of the casing. After the first driving the core is removed and the closed-end steel pipe section (lower portion of finished pile) is placed in the casing. Using the core as a follower, the pipe is then driven to the predetermined resistance in the bearing stratum.

• **Projectile controls sweep**—The follow-down method has the advantage of simplicity in the making the splice between the two sections of the pile, but the projectile method offers far greater control against the tendency of the lower section to run out of plumb or develop sweep, due to encountering boulders or other obstructions. When firmly controlled by rigid pile-driver leads the pipe section has a fair amount of resistance to bending strain set up by boulders or other obstructions encountered by the pile point. But in the follow-down method such control can be exercised only until the top of the pipe reaches ground level. From that point down, control takes place through a splice, which may extend 3 ft, or in some types as little as 18 in. below the top of the pipe section. Try to hold a lead pencil by the eraser only, while someone shoves against the point and you get the general idea.

The average length of steel pipe section of a composite pile on this particular job proved to be around 45 ft. To make the average overall length of 107 ft. the pipe section would have to be followed down 62 ft. after reaching the ground surface. This might be unimportant in a clean soil but in soil where obstructions would certainly be encountered on many pile locations, it would prove well nigh impossible to keep the pile within the rigid tolerance of the specifications.

On the other hand, in the projectile method, the pipe section would be guided by the predriven guide casing throughout nearly its entire drive. As will be shown later, added precautions had to be devised to prevent sweep even with the projectile method.

• **Slip-splice chosen**—There was also a choice to be made in the type of splice between the two sections of the composite pile.

In one method, the light shelled section overlaps the steel pipe section and is firmly attached to it by means of "dogs," a "screw joint" or a "peening action."

This locking of the sections together may take place before the lower section is driven below ground surface; or when the shell is set through the apparatus after driving of the pipe section is complete.

In the second type of splice, which has also been widely used by at least three piling contractors, the light shell section is not rigidly attached to the pipe section but joins it by some form of slip-joint so that the light shelled section may move upward independently of the lower pipe section.

For the job in question, there was an outstanding objection to each of the splice types.

• Locked-joint drawbacks—If soil-heave should prove to be severe, as it did here the top section probably would raise the pipe section with it, destroying contact with the hardpan. The seating of the pipe probably could be re-established by redriving but if the initial upward movement permitted soft clay to get into the hardpan socket the holding-down action of the pipe section probably could not be re-established and vibration or any slight upward strain on the pile might again lift the entire pile, seriously impairing its bearing value.

• Slip-splice pros and cons—The use of a "slip splice" would obviate this danger of raising the pipe section and would result in the elimination of the redriving.

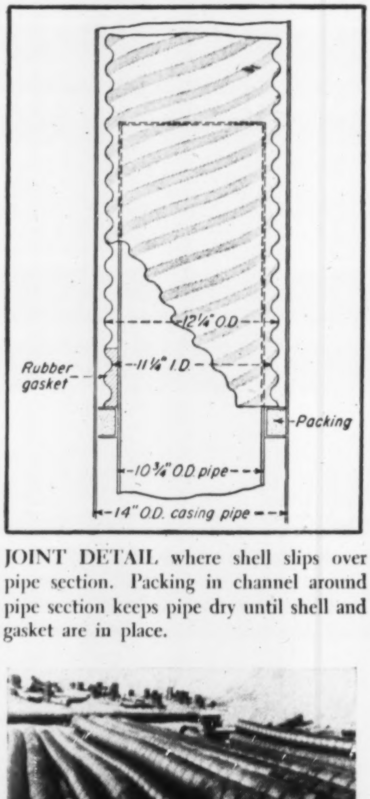
However, previous experience and observation had shown that the slip-joint had its own weakness. Where the splice would occur, as in this job, at a point in the soft clay stratum where natural soil pressures would be high and where the great volume of piling introduced would add artificial pressures to the natural ones, it would prove extremely difficult to form a slip joint that could be depended upon to seal out the clay.

The piling contractor came equipped to use either the follow-down or the projectile method and to form either the locked-on or slip-joint type of splice.

The final decision was to adopt the projectile method in combination with the slip-splice.

• Not enough leeway—One major splice trouble developed on the job, but gave way to an obvious, though expensive, cure. The original design of the slip-splice (which incidentally proved to be 100% perfect in the matter of sealing off the soft high pressure clay, and under test above ground held out soupy clay under 113 psi pressure) was wrong at one point. It was made to allow for only 18 in. maximum slip.

In the area of the closest pile spacing the soil surface might theoretically be raised 2.7 ft if the assumption were made that the soil from the ground surface to the bottom of the pile would react as an absolutely incompressible material. Since the soil movement is cumulative from the pile point to the ground surface, and since that movement can raise a pile only if it develops a bond with the pile, it would seem that the movement of the shelled section of the pile should be only about that of the soil at the mid-point of the pile. In other words, from the mid-point DOWN the slower moving soil would act as an anchor to restrain the movement of the top half of the pile. This is, of course, an over-simplification but long experience has shown that pile heave is, under practically all conditions, substantially less than ground heave. The 18-in. slip limit looked safe enough. Unfortunately, as previously noted, the heave in the deepest section exceeded the theoretical 100%, and in addition did not occur uniformly with the number of piles driven, as it would seem that it should do in an incompressible soil.



JOINT DETAIL where shell slips over pipe section. Packing in channel around pipe section keeps pipe dry until shell and gasket are in place.

RUBBER GASKETS have been glued inside these shell ends; another lies on top. They make a sliding seal at joint with pipe section. (Armco photo.)

By the time the heave had gotten well under way, the danger of excessive splice movement was realized. The limit of splice slip was increased to 2.6 ft and shortly thereafter to 3.0 ft, but of the first driven piles some 60 opened up at the splice and had to be replaced. After the longer lap had been adopted no further splice trouble was encountered.

• Secondary core needed

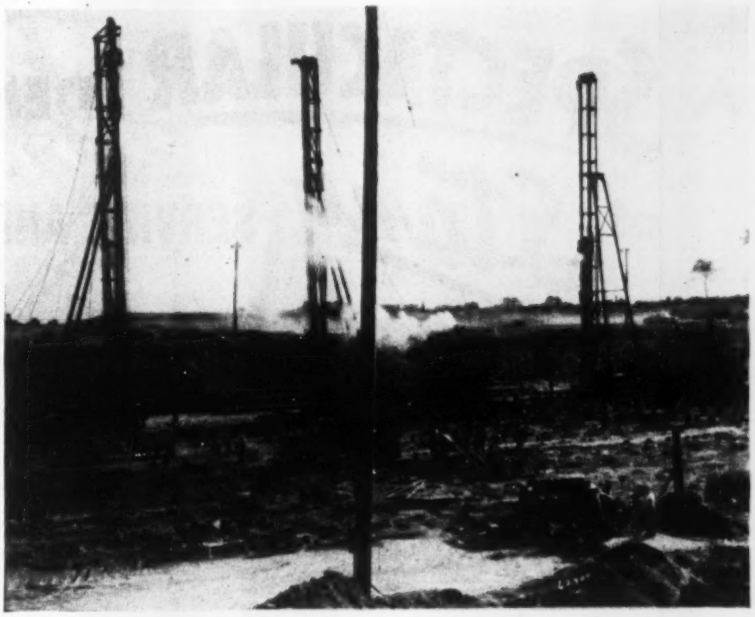
Three weeks of experimental and test driving and load testing left little question as to the correctness of the choice of method. The first half-dozen drive-down tests seemed to indicate that there should be little difficulty in installing piles by either method. The driver then was moved 50 ft and pile driving for load tests was started. It did not get far. Drive-down after drive-down was made but the piles led off so sharply that it was impossible to get within the rigid requirements for plumb and sweep. Five of the first six piles driven were completely outside the tolerances.

It was evident that boulders and gravel pockets were being encountered. An indication of these conditions had been given by the borings, but well-known facts had been overlooked by the contractor. One: 2½ in. borings will touch only a fraction as many boulders as will be encountered at the same location by a 14 in. pipe. Also a 2½ in. boring may wind its way among large boulders without giving any indication of their presence. The boulder situation was far worse than had been anticipated.

A further complication was introduced by the fact that many of the boulders were "floating" in a soft clay. Had the matrix been firm, as it generally is where boulders are encountered, the action of a boulder, hit by a heavy-walled steel pipe, would be either to break under the impact of the transmitted hammer blows, or to stop further penetration of the pipe.

With pipe and boulder both loosely held the tendency would be to force both the pipe and the boulder out of position, and that is what happened.

• Original driving apparatus—The casing through which the pipe section was to be placed consisted of a Grade



WHERE THE PILES MOVED—A portion of the Detroit water plant site, showing three of the four piledriving rigs that drove projectile piles.

B 14 in. x ½ in. wall pipe 74 ft. in length, with a 10¾ in. x ½ in. wall core fitted inside it. The obstructions encountered were so bad that this apparatus itself in some cases showed a sweep approximating the maximum tolerance allowed for the finished pile. A pipe driven through such a guide would be certain to go far outside the permitted tolerances. Obviously, it was necessary to develop a stiffer apparatus. As originally used, the core, except for the steel core-point, fitted loosely inside the casing. It could give the casing little support against bending.

The core-point was built up to give a snug fit in the casing, and frequent spacers were welded to the core to get bearing between core and casing. So arranged, the bending strength of the core was added to that of the casing. Test drives were again made. The stiffened apparatus drove plumb and without sweep—and continued to do so throughout the life of the job—but that did not finish the troubles.

• **Projectile sweep trouble**—The projectile section, even when driven through the plumb, straight apparatus, could not be kept true. The control of the casing was complete but the 10¾ in. x ¼ in. wall pipe itself was not sufficiently rigid. When obstructions were encountered, the pipe developed fairly sharp bends so that the piles would not meet the sweep specification. (The sweep specification required that some part of the bottom of the pile could be seen from the top when a light was lowered into the pile.)

• **Secondary core stiffens projectile**—It was evident that additional pipe rigidity must be obtained. This was accomplished by an adaptation of the same means used to stiffen the casing. A secondary core, made of heavy-wall pipe of a diameter to closely fit inside the 10¾ in. pipe, was used. After the 10¾ in. projectile section had been placed in the drive-casing this secondary core was placed inside of it. The main driving core was then inserted in the drive-casing and used as a follower to drive the 10¾ in. pipe with its secondary core downward beyond the bottom of the casing. At last the piles were fully within specification requirements. No further piles were condemned for sweep or plumb when driven.

• Piledriving procedure

The following is a step by step account of the piledriving method used:

1. Using a power-driven earth auger, a 13-in. hole was bored through the tough top stratum.
2. The casing and core were driven 72 ft below grade.
3. The driving core was removed from the casing and a 10¾ in. O.D. closed-end steel pipe (the projectile) was inserted in the casing. This pipe was of a length to reach full bearing in hardpan while 5 feet remained in the drive-casing.
4. The secondary core was inserted in the 10¾-in. pipe. The driving-core was replaced in contact with the 10¾-in. pipe. The hammer, riding the driving core, was put in operation and the pipe section driven until it showed the required depth and resistance.
5. The driving core was removed and a 12 in. corrugated shell carrying a rubber gasket was inserted through the drive-casing and forced over the head of the pipe section.
6. The secondary core was removed from the pipe section and the drive-casing withdrawn from the ground.
7. The shell and pipe were filled with concrete after all driving operations had passed beyond the previously ascertained radii of heave. Each pile on the site was examined immediately after driving, by means of an electric light lowered to the bottom of the pile or by using mirror reflectors. Out of 4,824 piles constituting the finished job, none was condemned for exceeding the tolerances.

• **No pile distortion**—An additional test made on every pile consisted of lowering a metal cone gage ½ in. less diameter than the inside diameter of the light shell, to the bottom of the shelled section to determine whether crushing of the shell had occurred during the period when the shells remained open after driving and before concreting. As stated, over 2,000 piles were open and unconcreted at one time, but none was reported distorted even within the close tolerance allowed. Though all shells and pipes were perfect immediately after the time of driving, a few were carried beyond tolerance by the movements of the soil previously described, and had to be replaced. Considering that many of the piles in the high lift section of the work, where pile centers were closest, had moved from their originally driven positions, in amounts of 6 in. to 12 in. (which was compensated where necessary by the driving of extra piles) this resistance to distortion seems remarkable. The shells were all of spirally corrugated type, part being 16-gage with fully welded seams and the remainder 18-gage unwelded.

The pile load capacity was checked by seven 100-ton load tests. Maximum net settlement in any test was ½ in. The 4,824 piles had a total length of 516,015 ft.

Four heavy-duty steel pile-drivers carrying 30,000 ft-lb hammers installed the piles. They worked two shifts per day whenever enough pipe was on hand to keep them going. Two 50-hp earth-auger boring plants, a service crane, a crawler tractor, welding machines, pumps, trucks and small tools, constituted the balance of the equipment that made possible the completion of the job in a period of 24 weeks driving time.

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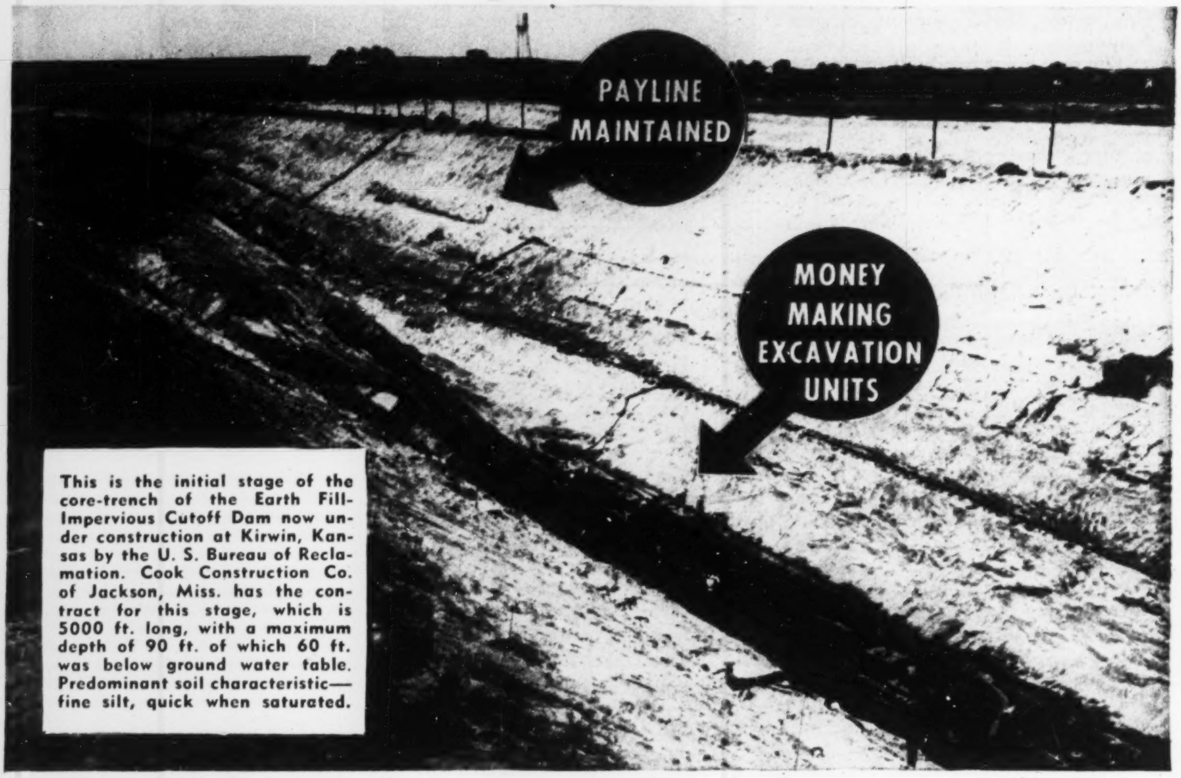

This is the initial stage of the core-trench of the Earth Fill-Impervious Cutoff Dam now under construction at Kirwin, Kansas by the U. S. Bureau of Reclamation. Cook Construction Co. of Jackson, Miss. has the contract for this stage, which is 5000 ft. long, with a maximum depth of 90 ft. of which 60 ft. was below ground water table. Predominant soil characteristic—fine silt, quick when saturated.

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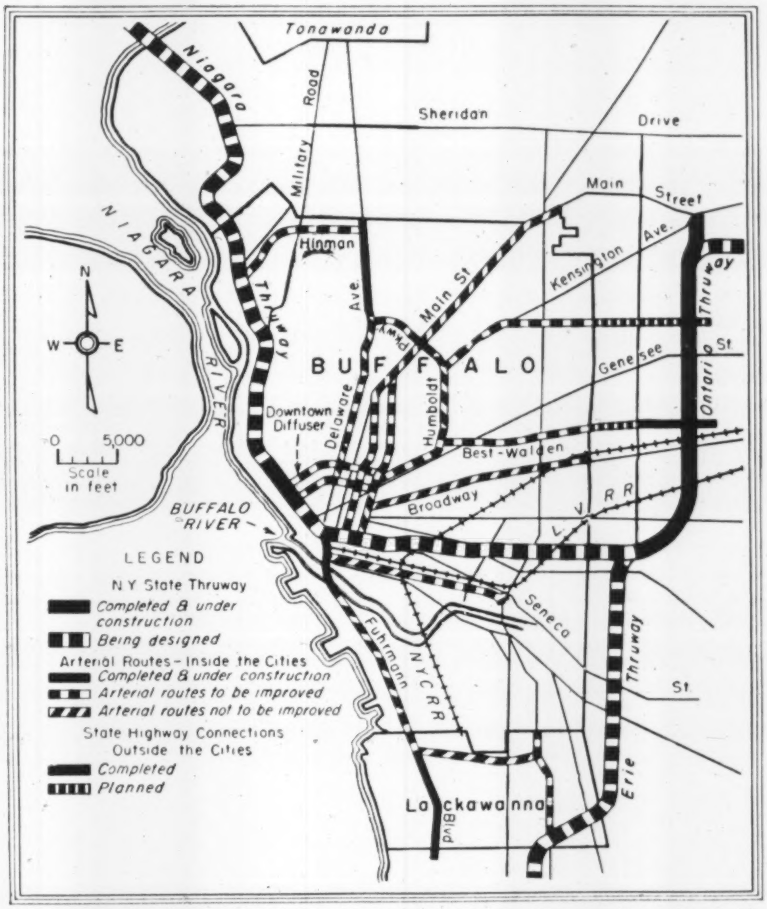
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ARTERIAL ROUTES OF BUFFALO'S MASTER PLAN. They are designed to facilitate the movement of traffic into the center of Buffalo as well as to speed the travel of traffic through the metropolitan area destined either for the Niagara region or going west toward, Erie, Pa.

Thruway branch will ease Buffalo traffic flow problems

Charles R. Waters
District Engineer
New York State Department of Public Works, Buffalo, N. Y.

THE NIAGARA THRUWAY, a branch of New York State's new thruway system, is being built right across the central business district of the city of Buffalo, rather than through the suburbs, in an unusual plan to use the superhighway as an arterial route in the city's traffic pattern. The fact that the Thruway forks at Buffalo, with one branch going north to Niagara Falls and one going west toward Erie, Pa., helps to make this plan effective.

Use of state funds to help cities solve their traffic problems was made possible by an act of the state legislature passed in 1944 to implement the urban-aid provision of the federal-aid highway act of the same year. Buffalo was picked as the first city in which to try out the plan. Under it, construction costs are borne equally by the state and federal governments, with the city participating to an extent of half the cost of land needed for the projects.

• An expanding area—Buffalo, with a population of 600,000, is New York's largest up-state city. It lies on the waterfront at the eastern end of Lake Erie with a central business district close to the lake and surrounded elsewhere by a residential and industrial area four to six miles deep. The population of the city proper is fairly static but the surrounding suburban areas are growing rapidly in all directions.

Buffalo is a community of heavy and diverse industries, the focal point in the development of the Niagara Frontier metropolitan area. Future growth of this area is dependent on a good highway and street network.

The original street layout pattern of the city was definitely of a wide-street radial pattern, somewhat like that of the city of Washington, D. C. Nevertheless, a great increase in auto and truck traffic into the central hub of the city caused congestion that only the construction of new arteries could relieve. Minor improvements made by the city over the years did little to ease the growing traffic congestion.

• Through traffic study made—When the New York State Department of Public Works entered the picture in 1946, an origin and destination survey was made, population and automobile registration trends were analyzed, also industrial location and growth potential and land use.

The time required to reach the city limits traveling at rush and normal hours was obtained by timing actual trips. Results of this study, projected to 1960, are shown in the accompanying diagram.

The combination of information thus obtained showed that with a few exceptions, the principal bottlenecks and congested areas were on the radial streets. Peripheral bypass routes constructed prior to 1930, with a few exceptions, are generally adequate.

• New York State Thruway—A decision to proceed with the construction of the New York State Thruway across the state occurred at about the same time that Buffalo's Urban Arterial Program was starting. This made it possible to tie the anticipated benefits together and adopt a coordinated scheme.

Those studies showed that the greatest amount of benefit could be obtained by running the Niagara branch of the thruway from a junction with the main line of that highway east of the city in an east-west direction directly into the business area. This would permit the people living in the eastern and northeastern suburbs to reach the business center in less than half the time required over customary routes.

Worthy of special note is the effect of the thruway on the time-flow zones, as shown in the time-flow map on page 42.

• City street relief—Main St. will be relieved by the thruway and also by the relocation of Kensington Ave., the widening of Walden Ave. and the opening of a street in the downtown area parallel to and just north of

Genesee St. Further relief will be provided for Main St. by a circumferential traffic diffuser surrounding the business district.

Delaware Ave., a major north-south radial street, has been widened to arterial standards in the northerly portion and it is planned to improve the remainder of this main artery. Also proposed is an expressway, known as the Hinman Ave. extension, to divert suburban traffic from Delaware Ave. at the northerly city line to the Niagara Thruway along the waterfront and thence to its destination downtown.

Delays now encountered at lift bridges across the Buffalo River are to be eliminated by building a $10-million high level bridge to carry Fuhrmann Boulevard.

• **Niagara Thruway**—The north-south section of the Niagara Thruway running from the downtown interchanges to the South Grand Island Bridge, in conjunction with the Hinman Ave. expressway, will serve as an interceptor of traffic generated in the northern surburbs.

The east-west portion of the Niagara thruway as planned at present traverses a closely built-up section of the city and would be costly both for construction and right-of-way. Some sections would cost more than $7-million per mile. Consequently, studies now are being made of the possibility of using the right-of-way of the Lehigh Valley R.R. spur to the waterfront, should the railroad be willing to sell that line, as has been reported. Traffic needs would be served about equally well by either location.

• **Progress on the master plan**—The master plan for this traffic relief program set up the work in separate projects with the understood policy that the detail plans for each one would be presented to the city for approval before advertisement for bids. The city thus has veto power over the advancement of any project. The city also can stop the initiation of a project by failure to provide its share of funds for right-of-way.

Several major portions of the master plan already have been completed, while others are now under contract. The details of some of the construction projects are as follows:

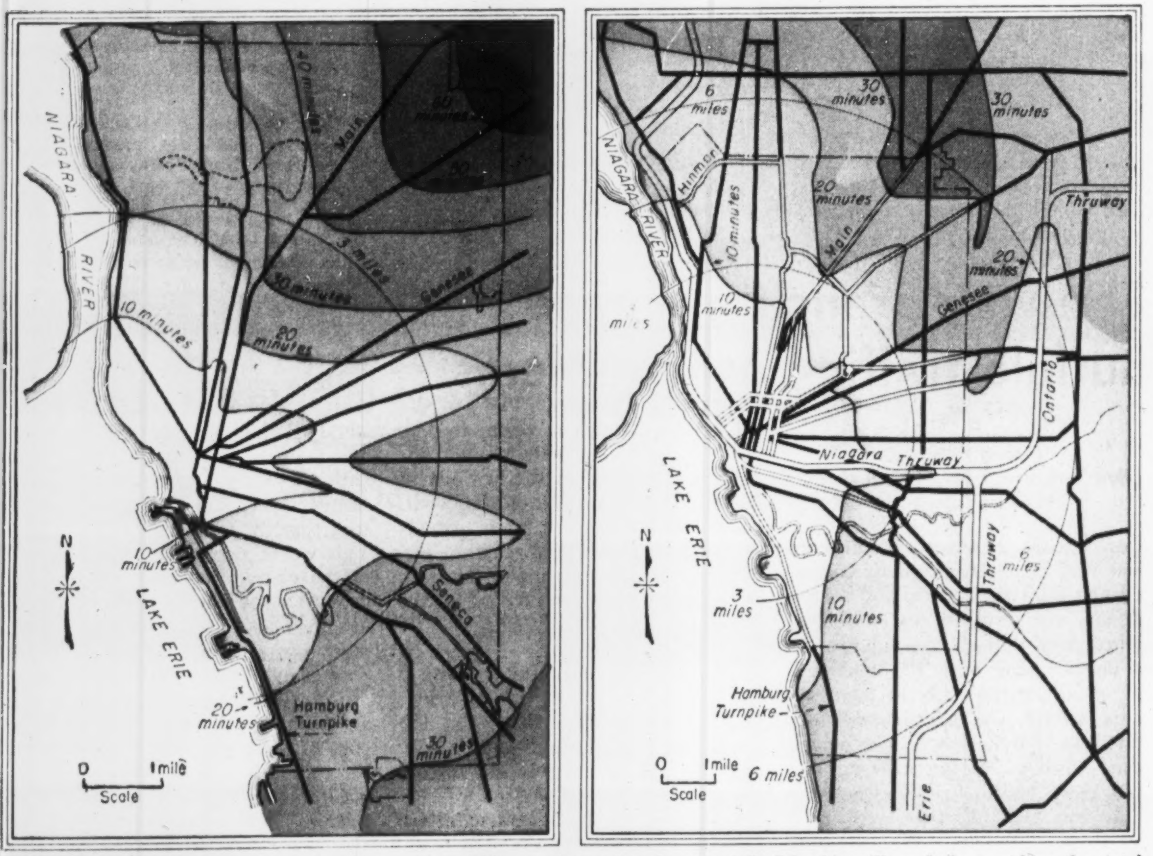
Before any major work could be initiated in the downtown area, it was necessary to remove the tracks of the Niagara Falls branch of the New York Central R.R., which now operates on some of the streets in this area, and to relocate them in subways or open cuts. This particular undertaking, known locally as the Terrace project, has been advocated for 70 years. The first work on it was put under contract in 1949 and the project was placed in service in August of 1952. Its cost was about $7 million.

The widening and reconstruction of Delaware Ave. in the northerly part of the city for a distance of nearly two miles, together with the widening and rebuilding of three separate overhead railroad bridges, has been completed at a cost of $2 million.

The Main-Humboldt underpass, a $2-million contract, was completed recently and opened to traffic.

Twenty-four piers for the High Level Bridge to carry Fuhrmann Boulevard over the Buffalo River have been completed under a $2-million contract. Recently an additional $321,000-contract for the south approach was awarded to H. F. Stimm of Buffalo. Work is now under way.

A contract for the piers and approaches at the north end, which will amount to $750,000, has been approved by the city council and will be advertised shortly. The total of all construction costs for this improve-


NIAGARA RIVER
40 minutes
50 minutes
Main
50
3 miles
30 minutes
Genesee
10 minutes
20 minutes
10 minutes
N
LAKE ERIE
Seneca
20 minutes
Hamburg Turnpike
30 minutes
0 1 mile
Scale
6 miles
30 minutes
30 minutes
NIAGARA RIVER
Hinman
20 minutes
10 minutes
Main
Thruway
20 minutes
Genesee
10 minutes
miles
Ontario
Niagara Thruway
LAKE ERIE
N
Thruway
6 miles
3 miles
10 minutes
Hamburg Turnpike
0 1 mile
Scale
6 miles
Erie

TIME-FLOW MAPS demonstrate the large savings in time of travel to downtown Buffalo that will result from making the state's thruway an integral part of the arterial-route development plan. At the left is the traffic-flow situation as it would exist in 1960 with no street improvements other than removal of surface cars.

AN UNDERPASS has been built to carry Humboldt Parkway below Main Street to end congestion at that major intersection.

ment will be more than $10 million.

• Construction progress—A one-mile section of the Niagara Thruway along the waterfront, costing $500,000, was completed and opened to traffic in 1951. A section of the Ontario Thruway, east of Buffalo, 4.5 miles in length and costing $5 million, also has been opened to traffic.

Construction work having a value of $3.5 million is now well advanced on two further contracts just east of the city, and work on four additional projects, which will carry the thruway to the easterly line of Erie County, also is under way.

Several firms of consulting engineers working under the immediate direction of the district engineering organization of the New York State Department of Public Works, are engaged on designs for various sections of the thruway running southwesterly to the Pennsylvania state line, as well as on the Niagara section along the waterfront and across Grand Island to Niagara Falls.

• Benefits of the plan—The benefits of the entire plan when completed, may be summarized as follows:

It will: (1) Diffuse traffic from and provide easy access to the thruway; (2) Relieve the overloaded radial street system; (3) Furnish a downtown traffic diffuser; (4) Expedite the flow of local and suburban traffic within the city; (5) Provide rapid connections between residential, business and industrial areas.

In the same way that the thruway has been correlated with the urban arterial work in Buffalo, similar tie-ins have been provided in the adjoining city of Lackawanna and elsewhere.

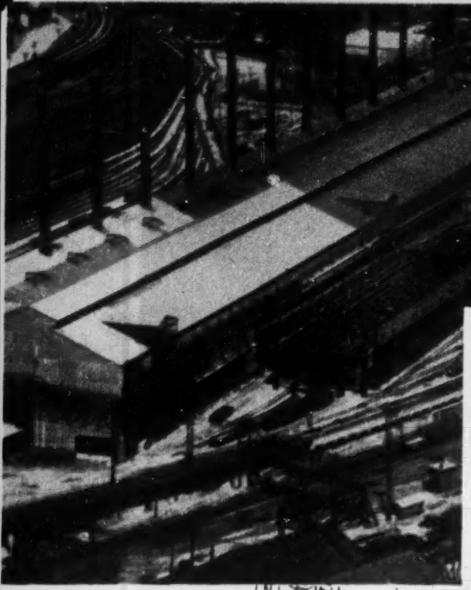
The Buffalo Urban Area Report was prepared in the Buffalo district office of the New York State Department of Public Works and the construction work is being carried on under direction of the writer. E. G. H. Youngmann, assistant district engineer, and engineers A. R. Erskine, M. A. Bebee, E. J. Hylant and the late E. C. Norton were in immediate charge of the preparation of the report and the ensuing studies and designs for the various projects. E. N. Scott, associate civil engineer, is coordinator of design for District 5. The late H. J. Ludden supervised construction up to 1952, and W. J. Agnew since.

Among the engineers who have had charge of construction in the field, are the following: F. E. Hurlburt, H. D. Parker, W. V. Storch, J. E. Niland, G. N. Pilger, H. R. Hilary, M. T. Broderick, I. N. Severance, A. Smith, W. S. Morrison, C. A. Stumm, J. E. Haley.

The following firms of consulting engineers are or have been engaged in surveys and designs for the various thruway and arterial projects in Buffalo and its immediate vicinity: Knappen-Tippetts-Abbett-McCarthy, Engineers; Clarke & Rapuano; Hardesty & Hanover; Andrews, Clark & Buckley; Edwards, Kelcey & Beck; all of New York City. Edward P. Lupfer Corp.; Jacob Fruchtbaum; A. Stuart Collins; Duchscherer & Oberst; Nussbaumer, Clarke & Velzy; Senior, Bissell & Bronkie; Krehbiel & Krehbiel; John R. Campbell; and Elwin G. Speyer; all of Buffalo; and Leon Wendel of Lockport, N. Y.

Construction contractors who have been engaged in this work are as follows: Depew Paving Co.; Main Construction Corp.; Seneca Supply & Equipment Co.; Brunner Asphalt & Construction; Bates & Rogers Construction Corp.; W. F. Hendrich Co.; H. F. Stimm, Inc.; D. W. Winkleman Co.; Rock Asphalt, Inc.; McLain Construction Corp.; C. B. Moon and Ferguson & Edmondson Co.; Bero Engineering and Construction Corp., and Johnson, Drake and Piper, Inc.

DEPRESSING THE TRACKS of the New York Central's Niagara Falls branch where they run through the center of Buffalo is a major part of the traffic relief program.



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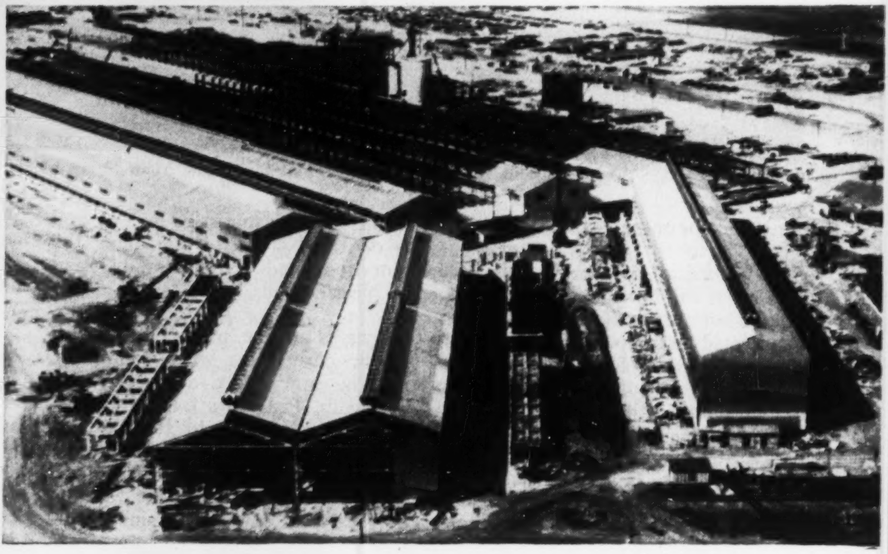

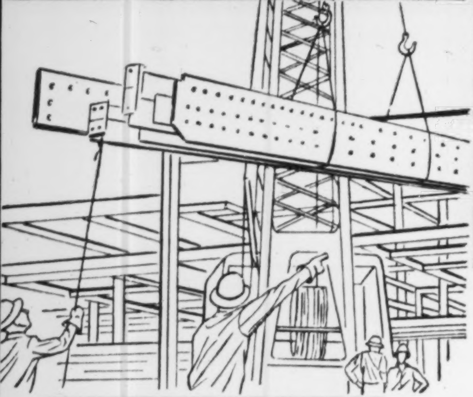

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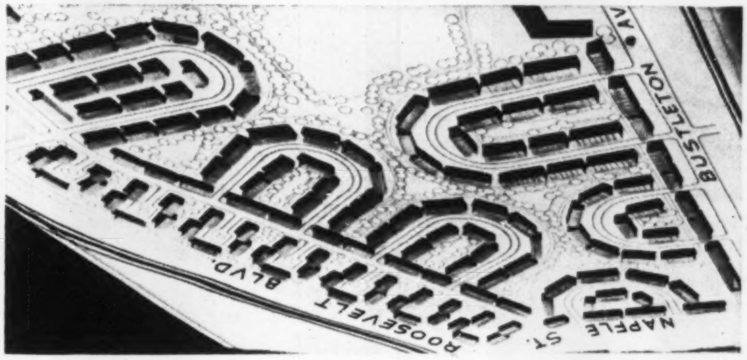

NEW TYPE row houses proposed for Philadelphia eliminate gridiron street pattern, provide for increased play areas and more attractive appearance.

New row type housing planned to eliminate monotony

Philadelphia gives row housing a new look—small units and curved streets

The old style row houses, built on a gridiron street plan in endless, monotonous rows, are making a comeback but in a more attractive setting, if plans of Philadelphia, Pa., are any trend.

The new idea was conceived by a group of local architects, builders, and civic groups under the direction of Edmund N. Bacon, executive director of the Philadelphia Planning Commission. It provides for a maximum of ten homes in any one group—the groups staggered and placed on curved streets to create more open space.

Behind the plan was the demand for low cost private housing in Philadelphia and the diminishing area available for this type of construction.

• **Large project**—First project to get under way is at Roosevelt Boulevard and Rhawn St. in the northeast section of the city. The tract of 67 acres will be improved with 1,041 homes at an estimated cost of $10-million.

The Philadelphia Board of Education has signified its willingness to erect a school on the tract. Footwalks provided in the rear of the homes will permit children to walk blocks to the school without once crossing a street.

Other features of the development will include garden spots in the rear of the homes, absence of through traffic within the area and the use in one part of the development of streets dead-ending in a turn-around.

Two years were spent in developing the plan. Reasons for this particular type of development are outlined by Bacon:

"Our job, as I see it, is to encourage the building of the lowest cost house that can be constructed and still meet the proper standards in regard to size, quality and placement on the land.

"The Philadelphia row house is one of the most economical building types for the normal American family that has ever been invented. The main thing wrong with it . . . . . is the way it has been placed on the land."

Bacon said further that the old style development failed to provide adequate play area for children and that the gridiron pattern presented dangerous raceway conditions in the streets and in the rear areas of the homes.

"If we can correct these safety hazzards and detrimental features by new ways of putting the houses on the land, by new community patterns, and still preserve the basic construction economy of the row house," he continued, "we will have made a major advance in meeting the needs of as wide a cross-section of families as possible by private enterprise."

Zoning changes—To encourage this type of project, the city provided a new class of zoning, C-1, to supplement the usual Class D which covered the old style row house. Claims are that this new class will also spur construction of low-cost private housing on various small tracts within the city. Previous attempts to erect row houses have met with opposition from neighborhood home-owners in the more expensive home brackets who believe land values would suffer with the erection of straight line row houses.

Federal land sale delayed in North Carolina

The Federal Government has agreed to delay for 60 days the sale of 18,000 acres of land on the Yadkin River in North Carolina, to give cities and towns there "a chance to plan to use it to increase the water supply of the area." The land was acquired originally nearly 20 years ago for a since-abandoned hydro-electric project.

A delegation representing Greensboro, High Point, Winston-Salem and Lexington, all in North Carolina, sought the delay to allow time for organization of a Central North Carolina Development Commission which would take over the land as part of a long range effort to provide more water for those cities as well as for several smaller communities. A survey of the water problems of the region indicated that the Yadkin River is the only logical supplemental source for increased water supplies.

Development of the area would require construction of a large impounding dam costing about $20 million, and as yet no study has been made to determine if the water flow is sufficient to make construction of this dam economically feasible. No estimate has been made on the cost of the land.

Subway starts . . . at last

After 35 years of setbacks, disappointments and heavy jokes about Philadelphia's subway that didn't go anywhere, the Locust Street Subway was formally dedicated on Friday, the 13th of February.

Ground for the subway extension was broken on Oct. 2, 1917, but the first World War halted the project during the initial stages. Work was not resumed until 1933, but in 1939 lacks of funds caused the tube to be sealed again.

The second World War caused further delays and nothing was done about equipping the subway until 1950. High prices and defense priorities were a headache during the last three years.

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Air pollution gets attention in Oregon

Oregon's Air Pollution Authority has issued its first cease and desist orders under powers given it by a 1951 law. Targets of the orders were the Nu-bora Soap Co. in Portland's crowded northwest industrial-commercial district, and a refuse dump in North Portland.

Nu-bora was given 60 days to control soap dust which the authority accused it of allowing to pollute the neighborhood; the dump operator was given 30 days to abate smoke, odor and fly-ash nuisances. The complaint against the dump was filed in June, 1952, by the National Biscuit Co. which operates one of the West Coast's largest baking plants nearby.

Air pollution violations are considered misdeameanors under the law.

- **State-wide study**—Results of a state-wide air-pollution study were announced by Engineer Richard E. Hatchard, who reported ash and smoke from sawmill waste burners appeared to be the major contributing factor in problem areas. The survey was recently conducted under a grant of $90,000 appropriated by the Oregon legislature.

North Bend, a big lumber center in Coos County on the coast, was the only community where samples showed pollution of more than 100 tons of material per square mile per month. Coquille in the same county had a rating of 50 to 100 tons per month, again because of lumber burners. Cities with ratings of 25 to 50 tons, which Hatchard considers to be a nuisance in residential areas, are Portland, Oswego, Coos Bay, Toledo, Newport, Klamath Falls, Nyssa and Roseburg.

New Milwaukee parking law arouses opposition

Milwaukee's new off-street parking ordinance (ENR Mar. 12, p. 60) has become a conversation piece in building circles in that Wisconsin city. Of greatest interest is the requirement that apartment buildings provide parking space for two cars for every three apartments.

Architects and builders agreed that the idea has merit but that land costs in the central area of the city are too high. They claim that apartment building costs will become prohibitive until land values drop to a point where the projects again will be economically sound.

One municipal official agreed that

there may be a drop in land value as a result of the ordinance, but added:

"But we in Milwaukee used to build entirely too tightly. This, I think, will bring more light into the central area.

"When Milwaukee's zoning law was adopted originally in 1920, we took a negative approach on parking. Now we are trying to change the whole philosophy. The commission's planning staff studied similar ordinances from all over the country. The result here is their best judgment. If it won't work, of course, it can always be amended."

• **Parking study**—One architect contends that many of the new downtown apartment buildings contain a large percentage of "efficiency units" rented by people who generally don't own cars, and that the ordinance should provide for a flexible requirement depending on the type of apartment predominating in the various areas.

"We have developed studies to show that for buildings with three bedrooms there should be 100% parking provided; for two bedroom units, it should be about 66%; for one bedroom 50%, and where there are only efficiency units, 20%."

FHA requirements for the city are on a sliding scale according to the location of the building. In the downtown area it is believed that the generally smaller apartments and the comparative lack of car ownership do not demand more than one parking space for each two living units. In the outskirts of the city, the ratio is increased to one to one.

Legal loophole

A loophole in the law enabled Cleveland, Ohio, to award an engineering contract to the firm of a member of the city's Board of Standards and Appeals.

Law Director Joseph H. Crowley said that the contract legally could be awarded to an engineer of the firm as an individual, and that the engineer could then arrange with the company for the performance of the contract.

Crowley added that unless the charter is changed "the city may be faced with mass resignations of board members anxious to have their companies considered for city business." As it stands now, members of part-time boards are considered officials of the city and thus automatically are disqualified from bidding on city contracts.

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ENR

State halts city sewer work

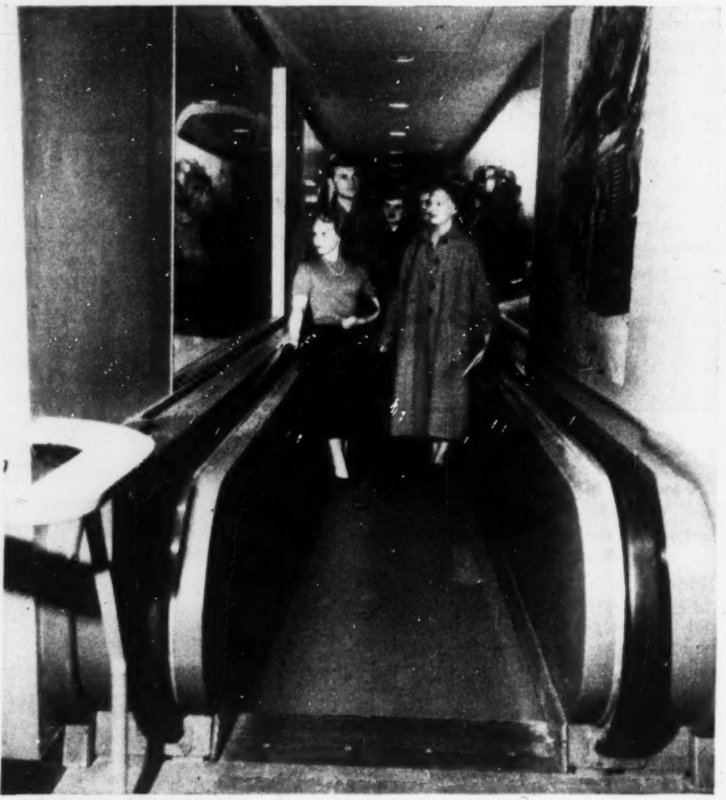
All sewer extensions for the Metropolitan Sewer District of Louisville, Ky., have been ordered held up pending definite plans for a sewage treatment plant. The order, issued by the Kentucky Water Pollution Control Commission, directly affected numerous subdivision developments on which work was halted until sewers can be provided.

The reason for the order was the lack of progress on plans for a sewage treatment plant estimated to cost $12 million. The city of Louisville and the sewer district have agreed that a bond issue probably will be necessary to finance the project, but both are reluctant to assume responsibility for the bonds.

The immediate effect of the order was to stop work on seven housing developments totaling about 1,100 homes, plus many smaller developments. The projects are in various stages of construction and the builders are unable to change plans to make a switch to septic tanks.

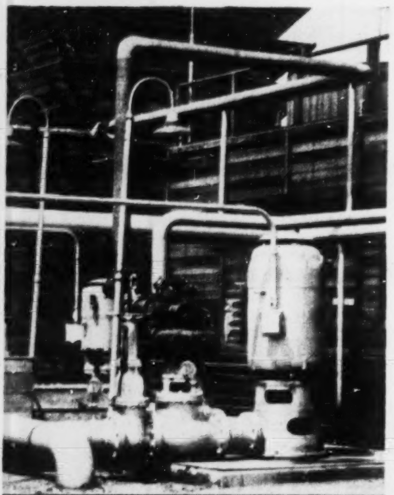
After refusing permission for two small sewer extensions, Louis F. Birkel Jr., executive director of the State Pollution Control Commission, said:

"This does not mean that the commission will refuse permits for sewer extensions until a sewage treatment plant is built and in operation. The commission recognizes that it may be required to approve sewer additions as a safeguard to public health, and to provide for orderly community development. It does mean, however, that the commission wants to know that sewage treatment is being included in the plans of the community."



MOVING SIDEWALK in Chicago's Museum of Science and Industry made its debut last month. The new rubber walk carries visitors 68 ft through part of a rubber exhibit in the museum. Built especially for the exhibit, the sidewalk operates on rollers like a continuous belt. Similar moving walkway devices are being considered for use in New York City. (Wide World photo)

Critical Jobs are Routine for JOHNSTON PUMPS . . .



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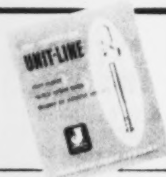

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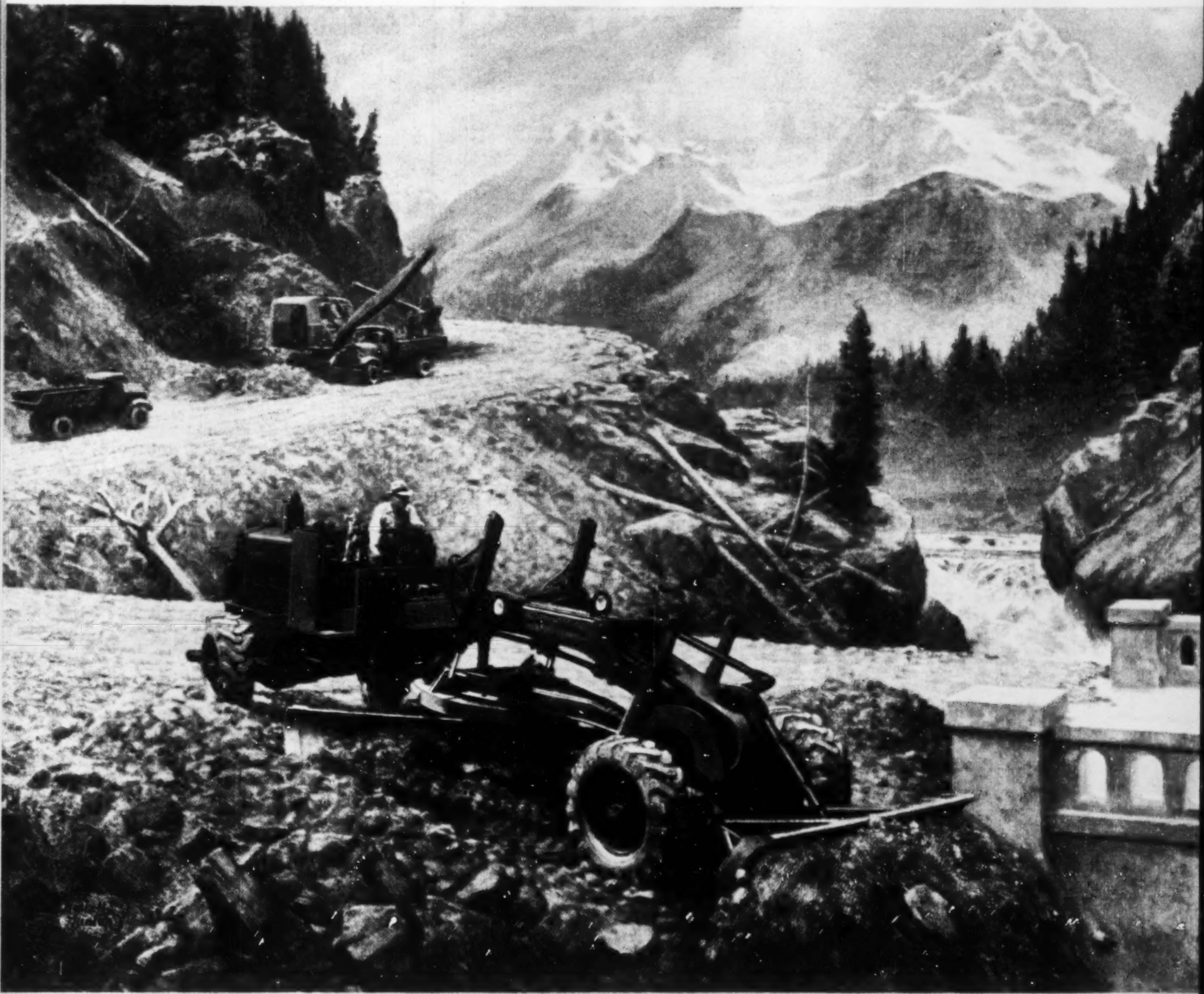

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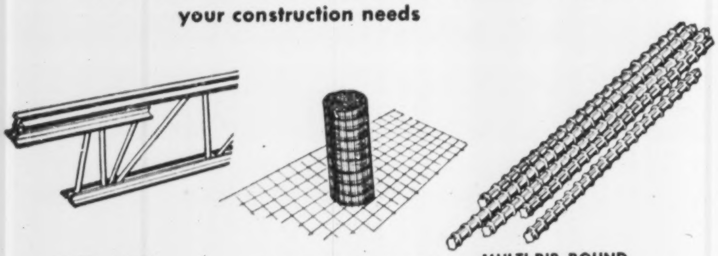

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PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

Zoning barrier cleared for Levitt's de luxe homes

With the last legal obstacle cleared away, William J. Levitt & Sons, Inc., expects to start building $18,000 "country club" homes at its Levittown, Pa., site soon.

A restriction in the zoning code of Middletown Township had prevented the firm from going ahead with its announced plans for the de luxe homes. Before amendment early this month, the zoning code had required all building lots in Middletown Township to contain at least 15,000 sq ft—3,000 sq ft more than Levitt had earmarked for each of the country club houses.

The amendment adopted by the township's Board of Supervisors, sets a 12,000-sq ft minimum lot size. It was favored by two of the board's three members because "Levitt is setting aside recreational areas which will more than equal 3,000 sq ft per house."

Municipal Briefs . . .

- **Sewer projects**—A contractor alleged to have done unsatisfactory work on city playgrounds has been barred from bidding on sewer projects totaling over $300,000 by the Philadelphia, Pa., Department of Procurement. This is the first action of its type in Philadelphia for many years and is taken as an indication of the current administration's get-tough policy.

- **Water pollution**—City officials of Houston, Tex., are worried over a pollution threat to the new water supply reservoir project on the San Jacinto River. The multi-million dollar job, scheduled for initial flooding in mid-summer, now receives the salt water discharge of oil well operations on the upper reaches of the river.

The city has petitioned the state attorney general's office to force oil field operators to stop dumping their salt water into the stream, thereby relieving a contamination hazard.

- **Street repair aid**—North Carolina legislators last month had two bills presented to them, designed to further street repairs in towns of 1,500 or less. The first bill would require the State Highway Department to do the desired street work upon request of the town, and the department then would charge the cost of the work against the town's share of state highway funds set aside as state aid for municipal streets. Similarly, under the second proposal, the Highway Commission would set up credit on its books for small towns. Upon request of the town, the commission would do street work to the limits of the credit. The bill was referred to a subcommittee.

- **Tin can salvage**—Tin cans from garbage salvage operations have been ticketed for Arizona's copper industry. The city of Phoenix has entered a contract with Chemex Systems, Inc., to provide for removal of the cans from city garbage and trash collections. Cans will be given a furnace treatment to burn off paper and waste, pounded flat and transported to copper smelters for use in copper recovery processes. Chemex will erect a plant near the city's cut and fill disposal site.

- **New rail station for Canton, Mass.**—Another move in the trend toward perimeter parking lots to serve metropolitan mass transport services was brought to light last month as the New York, New Haven & Hartford Railroad Co. announced plans for a new station at Canton, Mass. The plan has two aims: To relieve downtown streets of traffic and to provide hard-pressed commuters' lines with new sources of revenue. A railroad official said the plan calls for a $250,000-station large enough for 18-car trains and for a 10,000-car parking lot.

- **Approval needed**—By only a two-vote majority, Cleveland's City Council last month passed an ordinance requiring council approval on all future housing projects. More than 6,000 units of public housing are planned for the city. Under the new ordinance, each project must be approved separately by council.

- **Bridge New Orleans canal**—A four-lane bridge crossing New Orleans' industrial canal will relieve partially the traffic congestion in that city, officials hope. The state's department of highways will build the structure from a $30-million highway bond issue, of which $1 million was earmarked for the canal crossing. Construction is expected to start in late summer.

- **Growing pains**—$9 million is the estimated cost this year for improvements to the Cleveland, Ohio, water system to keep up with the growth of suburban areas of the city. Included in this amount is $4.9 million for laying new mains, $1.9 million for improvements to the Pleasant Valley Road pumping station and the division filter plant, and $2.4 million for electrification, landscaping and new buildings.

Number 3 of a series

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PREASSEMBLED TOLL BOOTHS

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By using T&C all steel toll booths, the Mystic River Bridge Authority was assured that the bridge would open on schedule. Result: *The entire toll collection system was in place, and ready for operation weeks ahead of time.*

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This man is backed by more time-tested products than any other oil company representative . . . by more graduate lubrication engineers . . . by more technical service laboratories . . . in short, by the *world's greatest lubrication knowledge and engineering service!*

We sincerely believe that a man with such a background can surely help increase the efficiency of all your equipment — reduce your maintenance costs — consistently make your operation more profitable. *Why not give him a trial?*

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WORLD'S GREATEST LUBRICATION KNOWLEDGE AND ENGINEERING SERVICE

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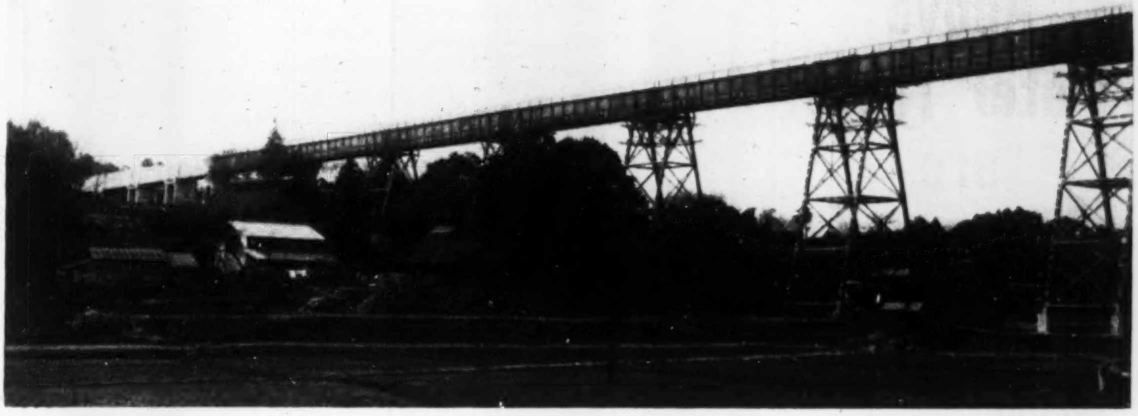

Aqueduct spans valleys with Yokohama water

Two elevated aqueducts 1,551 and 1,008 ft long, tower 71 and 98 ft above valleys crossed on their route to Yokohama, Japan, from a new extension of that city's water supply. The extension project, designed and constructed under direction of Isao Ibuka, chief engineer of the extension section, Yokohama city water works, is one of many such projects undertaken in postwar Japan to meet increased demand for water.

Details of his two unusual structures come from Mr. Ibuka through Dewey M. Radcliffe, utilities engineer, Engineer Section, Headquarters Armed Forces Far East. By way of introduction to his description, Mr. Radcliffe says:

"Water supply has been a paramount problem of U. S. Armed Forces occupying Japan since late 1945. It was apparent from the start that demand by the Army would outstrip inadequate available supplies. Responsible Japanese agencies and engineers had expansion plans, but war with its materials hardships had prevented any actual construction in the years since the war.

"At the end of the war, distribution system repairs needed attention first. Mains were generally intact, but service lines to damaged buildings were badly disrupted. It was not unusual, during 1946 and 1947, for water lost by leakage to amount to more than 60% of the total produced. Electronic leak detectors introduced by the U. S. Army helped in locating and eliminating much of the water waste by leakage."

It was found that "in many cases reduction of leakage alone was not enough to meet ever-increasing water demands."

• **Aqueduct structure**—A concrete aqueduct was chosen to transmit water 4.5 miles of the way from the new supply. Chief reason was the postwar shortage of steel. A large diameter pipe would have been required to carry the 82-mgd flow, and if it had followed the route of existing pipelines through populous areas it would have caused relocation of inhabitants. The 7.2x7.8-ft aqueduct constructed has a 230-cfs capacity, a 0.0006 slope.

Elevated aqueduct across the valleys was chosen in place of inverted siphon for the reasons stated by Mr. Ibuka in the box herewith. Head loss was a major concern. The aqueduct was considered less susceptible to serious failure in event of earthquake than a siphon operating under comparatively high water pressure. Costs were estimated to be about equal in either case.

• **Seismic design**—Simple beam construction incorporating girders in the steel channel was adopted as the design found most economical and most readily constructed.

Of particular concern to the aque-

Why Isao Ibuka built it up in the air

An elevated channel for this Yokohama aqueduct in lieu of the conventional inverted siphon was the choice of Chief Engineer Isao Ibuka. These are his reasons for and opinions about the choice:

"The first (reason) arises from a purely technical standpoint. That is, since the hills are rather low—considering hydraulics—a siphon would result in accruing of loss of head and this loss in turn would impose a difficult problem on the construction of the channel itself. When designed against emergency (mainly earthquakes), the steel aqueduct would be equal to the siphon in regard to cost as well as degree of safety.

"The other reason stems from the standpoint of operation of the water supply business. Most of the results of my labors during twenty-odd years in this business lie hidden in the ground from the public eye. Commercially, for the purpose of raising loans, advertising and water-saving campaigns, I have conducted a survey of laymen. From it sprang the idea that once the method is proved technically sound and there is no difference in the safety and cost, it would be very effective commercially if the work were above ground, in full view of the general public of the community.

"When I first stood on the completed steel aqueduct, momentarily I was seized with the illusion that I was standing on the rainbow of my dreamlike plan. But as I gazed on the grand panorama of solid foundation and tower on the ground and the steel aqueduct spanning the long valley, I was brought back to actuality and was glad that I had acted on my conviction."

Wood Piles Above Water Table are Permanent

When Pressure-Creosoted and Correctly Used

Major building codes recognize pressure-creosoted piles, cut off above water table, as permanent. Such foundations are today demonstrating their efficiency by bearing the tremendous loads of towering multi-story buildings. Write for Booklet WO5-100 which tells the story of wood piles.

KOPPERS
KOPPERS COMPANY, INC.
Wood Preserving Division
PITTSBURGH 19, PA.

HOW TO MAKE 1 CONCRETE VIBRATOR DO THE WORK OF 2

A prominent user of Vibro-Plus Internal Vibrators says one Vibro-Plus does the job of two ordinary vibrators. He says his concrete tests very high—and costs substantially less. Vibro-Plus will save money for you, too—cutting your concrete time and labor costs up to 60%. There are gasoline, electric and pneumatic models (with shafts and heads all interchangeable). All three deliver vibrating frequencies of from 11,000 to 15,000 per minute . . . yet operating and maintenance costs are low. Write today for bulletins and nearest distributor.

VB VIBRO·PLUS PRODUCTS, INC.
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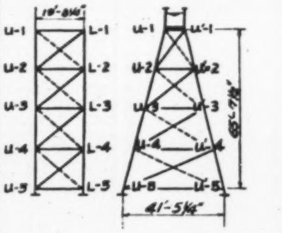
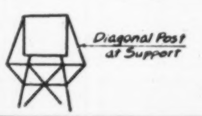
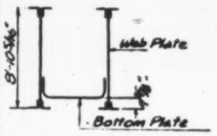
Table-1 Stress and Used Section

	Member	Mark	Stress	Used Section	Remarks
Tower	Main Posts	(U-1)-(U-2) ~ (U-4)-(U-5)	$\sigma_{al}=16{,}780$ $\sigma_{ac}=16{,}239$	2-[s 12"×3½"×3/8"	 10'-8¼" U-1 U-2 U-3 U-4 U-5 L-1 L-2 L-3 L-4 L-5 U-1 U'-1 U-2 U'-2 U-3 U'-3 U-4 U'-4 U-5 U'-5 65'-7⅛" 41'-5¼"
	Horizontals	(U-1)-(U'-1) ~ (U-5)-(U'-5)	$\sigma_{al}=12{,}443$ $\sigma_{ac}=13{,}509$	2-[s 7"×3"×9/32"	
	Struts	(U-1)-(L-1) ~ (U-5)-(L-5)	$\sigma_{al}=13{,}805$ $\sigma_{ac}=4{,}721$	2-[s 7"×3"×9/32"	
	Diagonals	(U'-1)-(U-2)	$\sigma_{al}=12{,}443$ $\sigma_{ac}=7{,}921$	2-[s 6"×3"×¼"	
		(U'-2)-(U-3) ~ (U'-4)-(U-5)	$\sigma_{al}=17{,}064$ $\sigma_{ac}=12{,}115$	1-[6"×3"×¼"	
		(L-1)-(U-2) ~ (L-4)-(U-5)	$\sigma_{al}=17{,}064$ $\sigma_{ac}=14{,}220$	2-Ls 3"×3"×3/8"	
Diagonal Post at Support		Movable Joint	$\sigma_{al}=17{,}064$ $\sigma_{ac}=14{,}220$	1-[7"×3"×9/32"	
		Fixed Joint	$\sigma_{al}=17{,}064$ $\sigma_{ac}=8{,}760$	2-Ls 3½"×3½"×3/8"	
Girder		Upper Flange	$\sigma_{al}=16{,}922$ $\sigma_{ac}=13{,}034$	2-Ls 6"×4"×½" 1-PL 1'-1⅜"×½"	
		Lower Flange	$\sigma_{al}=17{,}064$ $\sigma_{ac}=15{,}557$	2-Ls 6"×4"×½" 1-PL 1'-1⅜"×½"	
Bottom Plate				1-PL ½"	

σ_{al} : allowable stress excluding allowance for seismic load: lbs/in²
σ_{ac} : ~~actual~~ Stress ; lbs/in² at seismic incidence

duct designers was ability of the high, top-heavy structure to endure earthquakes. The disastrous experience of 1922 and the frequent quakes of varying intensities to which the country is subject had a definite influence on design factors.

Guidance on this particular problem was obtained from Dr. Tanaka, professor emeritus at the Tokyo University, an authority on bridges in Japan. A departure from customary procedures was devised.

Arms projecting laterally from points of support at the top of the tower are connected with struts to the water-carrying channel and the main tower post. Any seismic force on the channel is first applied to the struts, through which it is then transmitted to the tower. Struts are pin-connected to the arm and to the channel; this pin-connection affords movement under temperature changes.

Calculations for seismic stress were as follows:

W = weight of water plus dead weight of steel = 4,711 lb/ft
L = length of girder = 85.2 ft
W_s = seismic force = W + seismic acceleration = 4,711 lb + 0.4 = 1,844 lb/ft of girder

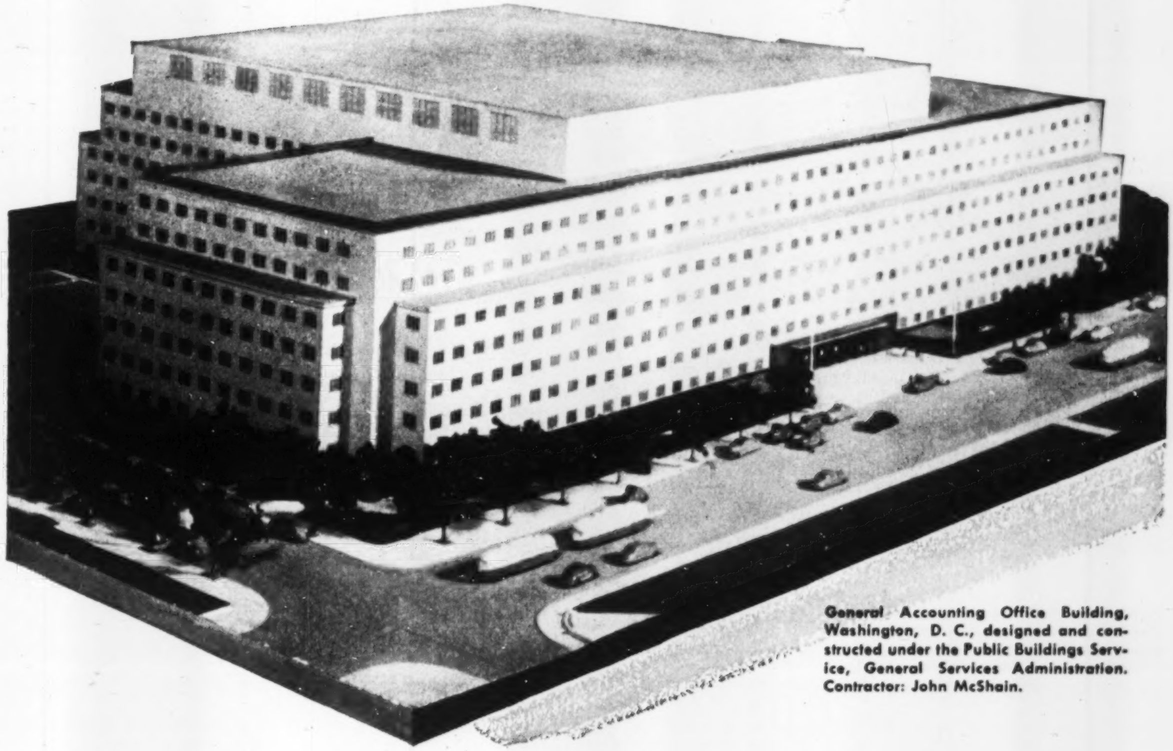
The seismic force which is calculated as applied to a strut is as follows:

P_s = lateral seismic force = $W_s + L/4$ = 40,150 lb
M_s = $P_s/2$ + height of girder = 40,150 lb/2 + 8.53 ft
S_a = stress on strut = M_s/d = 52,170 lb, where d is the moment arm.

• **Expansion joints**—Expansion joints were installed on the panels of the girder beams. U-shaped steel plates were used for this purpose. Rubber packing was used between the U-shaped steel plates and girder to insure water-tightness.

Erection of the steel aqueduct was accomplished with a crane and two cables used for hauling steel materials. In constructing the girder, a roller was installed on the top of the tower. Rails were attached upside down underneath the lower flange of the assembled girders and assemblies of two and three members each were slid on the rails and roller from the

"...reinforced concrete was selected on the basis of economy"



General Accounting Office Building, Washington, D. C., designed and constructed under the Public Buildings Service, General Services Administration. Contractor: John McShain.

CUT YOUR STRUCTURAL COSTS with REINFORCED CONCRETE

● Because economy was such a big factor in planning this imposing new structure, every possible means of cutting costs was given careful study. As a result—*it was built of reinforced concrete!*

Engineers and builders all over the country have found that reinforced concrete *costs less!* It saves erection time, too. It is strong, durable, inherently firesafe, and highly resistant to wind, shocks, and quakes. Moreover, materials are readily available from local sources. Consider all these advantages . . . and design your next building for reinforced concrete.

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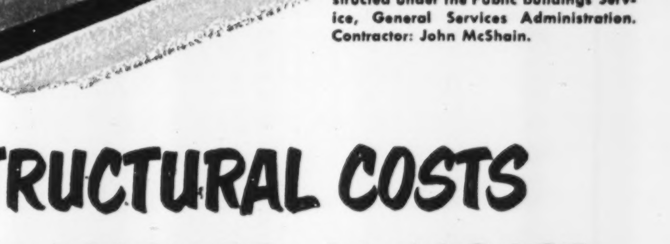

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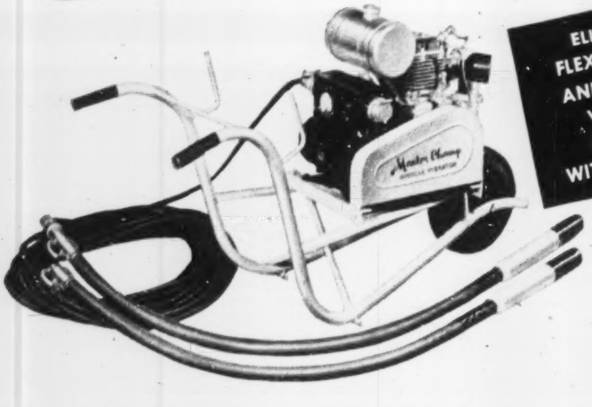
AMERICA'S No. 1 BUY

for portable HYCYCLE VIBRATION



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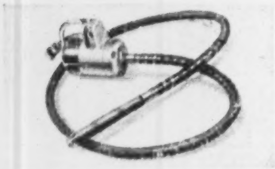

Electric Flexible Shaft Master Vibrator (above) Gas Flexible Shaft Master Vibrator (below).

You get quick portability with MASTER CHAMP Hycycle Vibrator and two vibrating units. If you need or are using more than one vibrator . . . here's your answer to greater portability and lower cost operation. Rated vibration speed is 10,000 rpm. Also operates one vibrator and 600 watts of light or provides 1,200 watts of lighting through both single phase outlets. And for standard requirements MASTER provides its regular Portable Gas or Electric Flexible Shaft Vibrators. See illustrations at left. The electric vibrator provides dependable vibration where electric power is available. The gas model provides vibration where the extreme portability of hycycle operation is not required.

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BETTER PRODUCTS FOR BIGGER PROFITS

tower top into their final position.

• **Waterworks features**—The Yokohama water supply system, constructed in 1887, was the first modern installation of its kind in Japan. Population was then only 63,000; consumption, 1.3 mgd. Daily consumption has increased to 92.5 mgd in a city which today embraces more than one million citizens.

The city still has a serious shortage of supply, necessitating the fourth extension program. This program, when completed, will increase the nominal daily capacity of the Yokohama water system from the present capacity of 92.5 mgd to 123.6 mgd.

It is expected that this increase will meet the requirements of the city until 1970 unless there is a widespread installation of water-borne sewage facilities. Because of the present method of sewage disposal, the per capita consumption is only 85 gpd.

The fourth extension program is designed for 996,000 consumers. It could supply 123.6 mgd by 1955.

The water source is behind a 180-ft high concrete dam constructed in cooperation with prefectural authorities developing the water source for the mutual benefit of power generation, irrigation and waterworks.

One large tunnel is involved, an 11.5-ft bore 2.6 miles long conducting water to Yokohama, Tokyo and Kawasaki (Kawasaki City is located between Yokohama and Tokyo). A small tunnel, conducting water solely to Yokohama, is 8.5 ft in height and width, 3.5 miles long.

Transmission piping includes 59-in. diameter concrete, cast-iron and steel sections totaling 8.68 miles in length. Open-channel transmission in concrete aqueduct and steel valley crossings are described above.

• **Treatment**—A sedimentation reservoir was formed by construction of an earthfill dam across a natural valley. It holds 211.2 mg in a settling area of 29.4 acres.

The filtration plant is a gravity type rapid sand filter having 16 beds fed at the rate of 3.1 gpm per sq ft. Filter capacity is 68.4 mgd.

Feeder mains in sizes 18 in. to 43 in. total near 29 miles in the extension project—all cast-iron.

Yokohama will have two water sources after completion of the fourth extension work. The old one is 24.8 miles from the city, and as a result of the three previous major extension programs, 70 cfs of river water is made available. The second water source is being developed under the fourth extension program.

STEEL DECK . . .

BUILT-UP SADDLES ELIMINATED

Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting, fitting or bending necessary.

Still the Most Economical, Permanent, Firesafe Roof Available Today!

Steel Deck roofs a greater percentage of new construction year after year . . . and there's a reason for this growing preference. It lies in the following definite advantages not common to other types of roof construction: Steel Deck can be installed in any kind of weather—no waiting for materials to dry . . . it can be insulated to the exact degree to meet "U" Factor requirements in any given locality without regard to structural properties . . . and, most important, Steel Deck's light weight permits substantial savings in the supporting structure—total dead load, including insulation and waterproofing material, is less than any other type of permanent roof construction. Mahon Steel Deck is available in Galvanized Steel, Galvanized Enamel Coated Steel, or Enamel Coated Black Steel. Stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enamel coating process, the metal is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. These Mahon features warrant your consideration when selecting Steel Deck for any project. See Sweet's Files for complete information, construction details and specifications, or write for Catalogs B-53-A and B.

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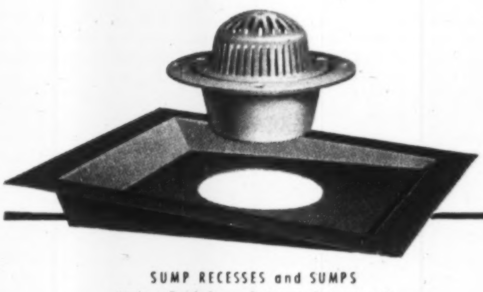
Manufacturers of Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel; Insulated Metal Wall Panels; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

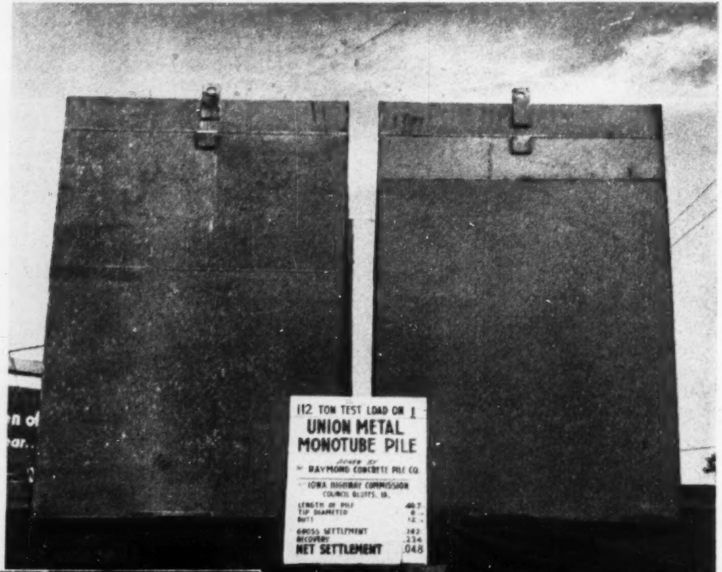


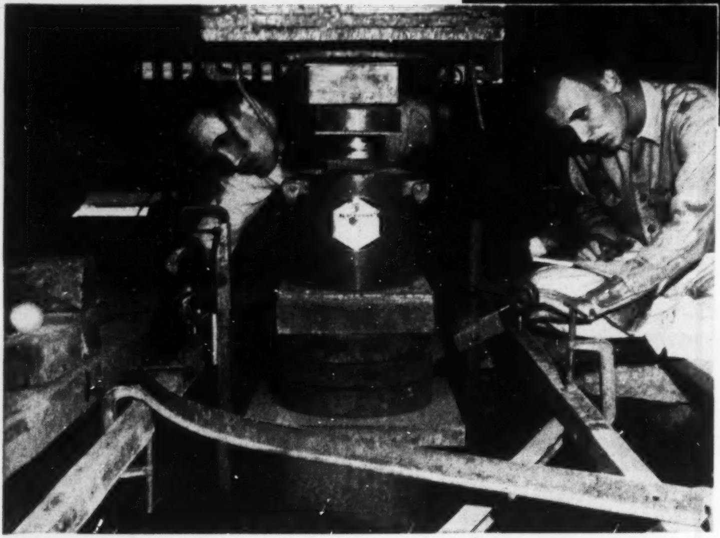
SUMP RECESSES and SUMPS

Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

MAHON

Predesign pile loading tests





Above: Four large water-filled steel tanks provided a dead load exceeding 120 tons in recent friction pile tests for the Iowa State Highway Commission.

Left: During Monotube testing, dial readings were taken at specified time intervals as load increments were applied. Scales shown are only two of several reference points on instrumentation framework, which were checked by wye level each time readings were taken.

PREPARATORY to designing an overpass near Council Bluffs, the Iowa State Highway Commission conducted a series of pile loading tests. Careful engineering preparation and unusually thorough instrumentation provided highly accurate test results.

A 40-foot Monotube in fine brown sand was loaded to 112 tons with a settlement of only 0.048 inches. Specified load increments were applied by means of a hydraulic jack bearing against the 120-ton dead-weight of 4 water-filled steel tanks.

If you have foundation problems coming up, check with Union Metal for helpful engineering service . . . for accurate Monotube pile test data . . . and for the latest information on modern, easy-to-drive piles that can save you plenty of time and money. Write to The Union Metal Manufacturing Company, Canton 5, Ohio.

Monotube Foundation Piles

UNION METAL

Plan early construction of Turkish hydro project

The Turkish Ministry of Public Works will invite bids in the near future for the construction of the projected Seyhan Dam and power plant. The Seyhan project is located on the Seyhan River near the city of Adana, close to Turkey's Mediterranean coastline.

Seyhan Dam will be an earthen structure about 4,900 ft long at the crest with maximum height of about 180 ft. A 26.2 ft ID concrete lined tunnel 2,200 ft long, and steel penstocks 17.2 ft ID will carry the water to the powerhouse and irrigation outlet. Individual surge tanks over each penstock are planned.

The powerhouse eventually will be equipped with three hydro-electric power generating units rated at 22,500 kva each.

Only two generating units will be installed initially. There will be a gate-controlled spillway and an emergency overflow channel.

A report on the $32-million project was submitted to the Turkish government in 1950 by International Engineering Company of San Francisco. In the latter part of 1952, the Turkish government commissioned Knappen, Tippetts, Abbett, McCarthy, New York City consultants, to design and supervise the construction of the entire project.

International briefs . . .

- **Canadian iron ore project**—Caland Ore Co., a subsidiary of the Inland Steel Co., Chicago, has leased an iron ore body in northwestern Ontario to be developed with a $50-million Inland investment over a 7-year period. Test drillings have indicated an ore deposit of at least 50-million tons in the leased area at Steep Rock Lake, Ont.

Three million tons of ore a year, at peak production, will be shipped from Port Arthur, Ont., to Inland's mills at Indiana Harbor, Ind.

- **Pakistan hydro project**—Preliminary details for a $50-million hydro-electric and irrigation project have been worked out and approved by the Pakistan government. On the Kabul River near the Afghanistan border in northwestern Pakistan, the dam and reservoir ultimately will develop 180,000 kw and irrigate more than 100,000 acres. Canada will aid in the development project with equipment and some financing.

Cut cost Figures in HEAVY HAULING
TORQUE MULTIPLICATION AND CONVERTER BRAKING FOR CONSTANT UP AND DOWN GRADES
Built for a Long Life . . . Backed for a Lifetime
TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

Torque multiplication up-to-6 times—combined with smooth, powerful, *automatic* torque converter braking—are making these Dart Model 140 Trucks stand out in hauling performance and operating economy at the Pickands-Mather Company's West Hill Mine at Coleraine, Minnesota.

The power of their 300 hp Cummins NHRS Diesel engines is delivered through Twin Disc Model CF Torque Converters—providing smooth uninterrupted acceleration on steep pulls—as power transmitted *stays in balance* with load demands. Operators control their trucks both on the steep up-grade and downhill runs with the accelerator—seldom have to shift gears, or touch the brake pedal.

In heavy-duty off-highway trucking applications, Twin Disc Model CF Torque Converters are contributing to bigger payloads handled faster . . . and sharply reduced equipment maintenance costs.

Get the full story on Twin Disc Torque Converters for all on-and-off-highway trucking applications. Write for Bulletin 501.

Twin Disc offers two truck type torque converters—Model CF (top) with *automatic* torque multiplication and downhill braking for foot-pedal control on short, steep, up-and-down hauls—and Model DF (below) with *selective* operation on all functions—downhill braking, uphill pulling, and Direct Drive for the straightaways.

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin · HYDRAULIC DIVISION, Rockford, Illinois

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Imported CASTELL lays it on the line

- **SMOOTHER**—no hard spots.
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- **ECONOMICAL**—25% to 33⅓% more wear.

CASTELL the drawing pencil with the Master Degrees

Your choice of CASTELL 9000 wood-encased pencil or balanced Push Button LOCKTITE Holder. Black or colored.

Imported CASTELL 9000 and CASTELL 9030 Imported Leads —18 degrees —full range, 7B to 9H.

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*Imported from West Germany

MEN AND JOBS

J. STUART CRANDALL, consulting engineer, head of Boston civil engineers.

Crandall heads Boston Engineers

J. Stuart Crandall, consulting engineer, Crandall Dry Dock Engineers, Cambridge, Mass., was elected president of the Boston Society of Civil Engineers at its 105th anniversary meeting March 18.

Born in Nova Scotia in 1891, the new president was graduated from the University of Maine in 1915; received the degree of C. E. there in 1923, and later did graduate work at the Massachusetts Institute of Technology. After graduation, he was with the Crandall organization in this country and Cuba, and was a lieutenant in the U. S. Engineers in France during World War I.

After that war he became engineer and treasurer of the Crandall company, and in 1930 vice-president. Crandall lectured from 1935 to 1941 on harbor engineering at the Harvard Graduate School of Engineering. He was official government delegate to the 16th Congress on Navigation at Brussels, Belgium, in 1935.

Governor names six to bridge building groups

Georgia's Governor Herman Talmadge has appointed six members of the two bridge building authorities recently created by the state general assembly.

Members of the toll bridge authority include Bibb County Commissioner Kenneth Dunwoody of Macon, DeNean Stafford of Tifton and Robert B. Lee, chairman of the Board of Commissioners of Lee County.

The second authority, created to construct modern bridges to replace worn out structures with funds from the sale of revenue certificates, is composed of Jim L. Gillis, chairman of the State Highway Board and by law the chairman of the authority; John J. McClanahan of Elberton, and Frank Binford of Thomaston.

Beightler offered Ohio Turnpike Commission job

Maj. Gen. Robert S. Beightler has been offered the post as Executive Director of the Ohio Turnpike Commission, according to an announcement from Commission Chairman James W. Shocknessy.

Gen. Beightler served as Ohio's Highway Director in 1939 and 1940 and was commander of the 37th Division in World War II. He was commanding general of the American forces stationed on Okinawa until ill health forced his return to the United States, to enable him to enter Walter Reed Hospital.

Careers . . .

• **Appointed**—**Ivan C. Crawford**, consulting engineer, Denver, has been appointed director of the Colorado Water Conservation Board. He retired two years ago as dean of the College of Engineering, University of Michigan . . . New manager of the Atomic Energy Commission's New York Operations Office is **Henry B. Fry** . . . **Wilbur E. Kelley** will take over as vice-president in charge of engineering for the Catalytic Construction Co. . . . **Ward R. Douglas**, secretary of the Kansas Bostwick Irrigation District, No. 2, has been named Kansas Director for the Four-States Irrigation Council . . . In charge of slum clearance in Columbus, Ohio, is **Kenneth E. Thomas**, recently appointed as the city's assistant safety director.

• **Elected**—The Council of the American Institute of Consulting Engineers has elected **Scott Turner** as its president with **Charles E. De Leuw** and **Elmer X. Timby** as vice-presidents . . . Named president of the Northwestern Society of Highway Engineers is **A. G. Skelton**, Portland district engineer, Oregon Department of Highways . . . Members of the recently former Struc-

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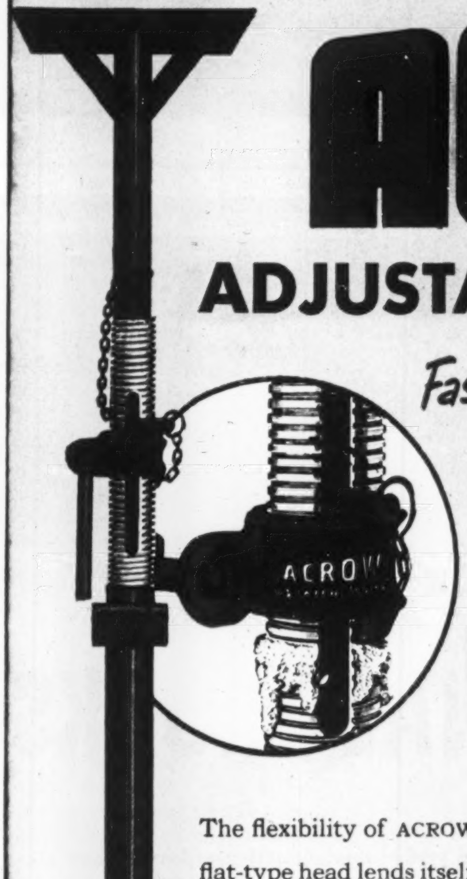

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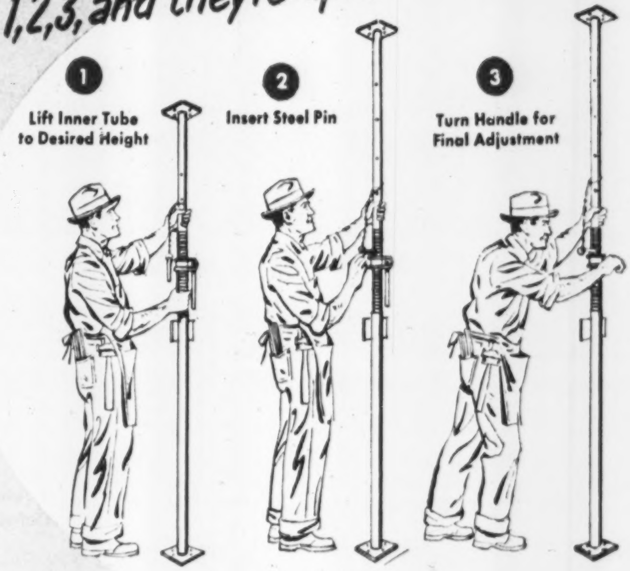
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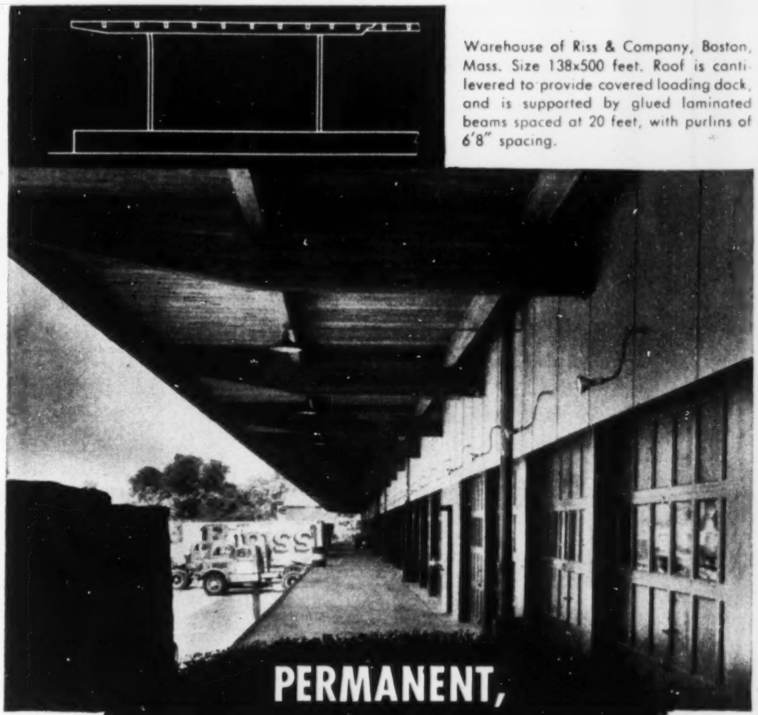
tural Concrete Association elected as their president **E. S. McKittrick,** head of a California contracting company . . . **Leland M. Craig,** executive vice-president of the Southern Engineering Co., Charlotte, N. C., has been named to head the firm . . . New president of the Constructors Association of Western Pennsylvania is **Howard H. Sturdy,** vice-president of the Dravo Corp. . . . Named to the top post in the Kansas chapter of the builders' division, Associated General Contractors is **Frank E. Blaiser,** Wichita . . . **W. E. Naumann,** vice-president of the M. M. Sundt Construction Co. will head the Arizona Chapter, Associated General Contractors for the coming year . . . Elected president of the North Carolina Professional Engineers is **George S. Rawlins,** Charlotte.

• **Honored**–**Virgil E. Gunlock,** Chicago's Commissioner of Public Works, has been awarded a high service award of the Illinois Society of Professional Engineers for outstanding service to the society during his tenure as president in 1951 . . . Two Colorado engineers last month received U. S. Bureau of Public Roads meritorious service awards for contributions to road construction. **Jesse E. Williams,** Colorado district engineer, was honored for his work in Turkey, while **Clyde E. Learned,** division design engineer, was cited for his work on the Alcan highway . . . **Robert J. Commins,** Houston consulting engineer, has been recently named "Engineer of the Year" by the Texas Society of Professional Engineers.

• **Retired**–Retirement of **A. A. Potter,** Dean of Purdue's school of engineering, was announced this month . . . **Helland C. Headley** has retired as chief of construction and maintenance for the North Atlantic Division, Bureau of Public Roads . . . The University of Louisville has accepted resignation of **Wylie B. Wendt,** professor of civil engineering, who becomes professor emeritus.

• **Announcements**–Baker and Spencer, Inc., New York consultants, have announced their affiliation with Frederic R. Harris, Inc., New York. **Edward J. Quirin,** president of the Harris firm will become head of the new company . . . A new company in the wood laminating industry has been formed by **W. J. Van Arnam,** former president of Timber Structures, Inc., Portland, Ore., and **Andrew E. Toth,** former sales representative of the same firm. The new company will be known as Timber Tech Corporation.



Warehouse of Riss & Company, Boston, Mass. Size 138x500 feet. Roof is cantilevered to provide covered loading dock, and is supported by glued laminated beams spaced at 20 feet, with purlins of 6'8" spacing.

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Today, this little plant is a busy one. Located near Bailey's Cross Roads on Columbia Pike in Arlington County, Virginia, (only 15 minutes from downtown Washington) it's turning out 90-100 t.p.h. of 1¼″ minus material with 50% crushing The Arlington County Bureau of Public Roads is an important customer

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Second: A quick, simple adjustment of the jaw crusher makes it possible to balance the load between the two crushers *while the plant is in full operation,* without changing screens. When material in the pit runs coarse, open the jaw and let the roll crusher do more of the work. When pit material is running fine, close the jaw until it does its full share. Result: both crushers are kept busy . . . and your plant operates at peak efficiency at all times.

There's a Pioneer Portable Plant for every job

Whatever your requirement, there's a PIONEER Portable Plant that will do the job. Duplex plants are now available in seven different sizes, ranging all the way from the little 17V (and 18V shown above), to the big 46VE, with Diesel Electric Drive. All feature the exclusive PIONEER principle of Bottom Deck Feed . . . all offer the famous PIONEER EDGE in performance.

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Above is a closeup view of one of the giant sections of the Boeing Door.

New unheard-of dimensions in mechanical doors! That, literally, was the challenge presented by the entrance doors for the new B-47 Flight Hangar built by Boeing Airplane Company at Wichita, Kansas.

Two openings each called for eight sections—66 feet wide . . . 60 feet high—a total width of 528 feet. Two other openings were 264 wide by 60 feet high. A total opening area of 95,000 square feet! And, each section of each door had to open independently—or, all had to operate simultaneously!

International's door engineers, working with the architects and Boeing planning staff, actually helped to develop new concepts in door design to accomplish all that these doors are called upon to do. These ideas are exemplified in the completed entrance—the world's largest.

If you have a door problem—unusual or commonplace, —call in International's experienced door engineers.

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STRUCTURAL STEEL • INDUSTRIAL DOORS • REVOLVING DOORS • STEEL BUILDINGS

OBITUARIES

Francis A. Anderson, 69, head of the F. A. Anderson Construction Co. of Vero Beach, Fla., died there Feb. 27. Mr. Anderson, whose specialty had been marine construction until he undertook general contracting in Vero Beach seven years ago, formerly was affiliated with Great Lakes Dredge and Dock Co., of Chicago and Morrison-Knudsen Co., Boise, Idaho. He had supervised major projects in Chicago, Milwaukee, Toledo, Albany, Salt Lake City, Jacksonville, Honolulu, and other municipalities. At the time of his death, he also was resident manager of Whitesands, a beach-house and apartment development on the Atlantic Ocean at Vero. The development was built in 1952. Mr. Anderson was father of Russ F. Anderson of McGraw-Hill World News.

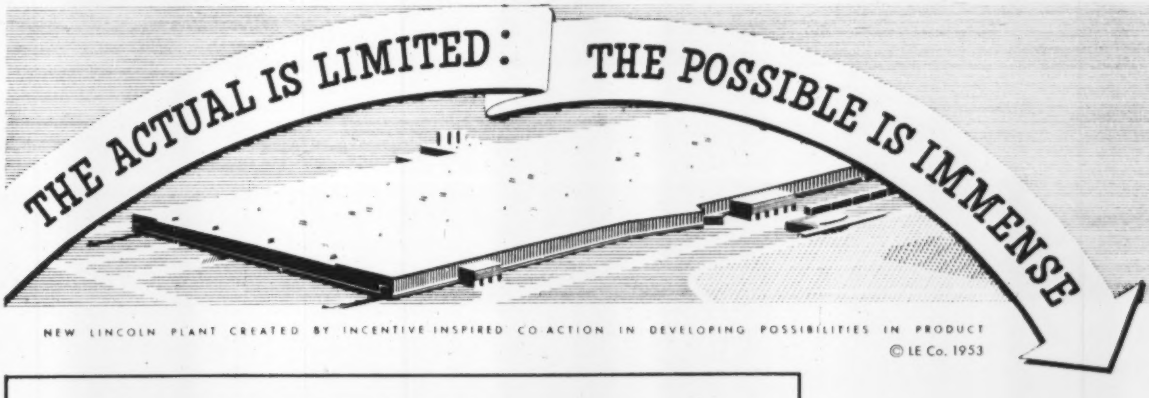
Samuel Edward Tarbutton, 88, one of the oldest builders and contractors in Wilmington, Del., died Feb. 24 at Newark, Del. A builder for half a century, he retired 12 years ago.

William Burder Ferguson, 75, of Hickory, N. C., who helped place the Canadian shipyards on a production basis in World War II, died Feb. 26. He was a graduate of the United States Military Academy and of the Massachusetts Institute of Technology. During World War II he was a consulting engineer with the Dominion of Canada. He was a brother of Homer Ferguson, former president of the Newport News, Va., Shipbuilding and Dry Dock Co., and of Maj. Gen. Harley Ferguson, of Washington, D. C., who directed the raising of the Battleship Maine from the harbor of Havana, Cuba, and who planned the straightening of the Mississippi River for the U. S. Army Engineers Corps.

Frank S. Sellew, 74, a building contractor and a former building supervisor for the Connecticut State Park Commission, died March 1. He was one of the planners of East Hartford's $7.2-million building program and served as clerk-of-the-works of the East Hartford School Building Committee.

William E. Swift, 82, retired civil engineer who conducted a special study in connection with the construction of the Panama Canal and planned a part of New York City's subway system, died at Harwinton, Conn., March 1. He received his engineering degree from Massachusetts Institute of Technology in 1895.

(*Continued on page 69*)



NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

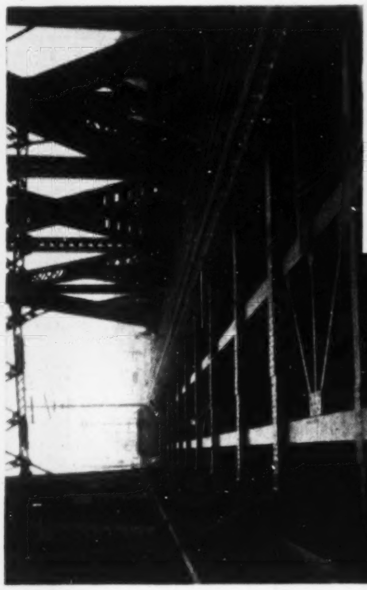
© LE Co. 1953

LINCOLN WELDING SPEEDS BRIDGE REPAIRS

...helps maintain Rapid Transit schedules

By **Paul K. Jones,**
Director of Transportation
Shaker Heights Rapid Transit
Shaker Heights, Ohio

By taking advantage of arc welding in simplifying repairs, it was possible recently to save considerable time in the reinforcing of a bridge on the Shaker Heights Rapid Transit right-of-way. Cross braces that had been weakened by rusting had to be replaced with heavier members of angle iron. As this work required removal of right-of-way track, it was imperative that every effort be explored to eliminate delay in getting the track replaced. Arc welding achieved this result in addition to eliminating rivets thus making the bridge easier to paint to lower future maintenance costs.



▲ **Fig. 3. Double track right-of-way** *on Shaker Heights Rapid Transit System. Weakened cross braces were replaced in minimum time with arc welding.*

Fig. 4. Lincoln 200amp "Shield-Arc"▶ *engine driven welder used for faster, easier replacement of cross braces.*

SIMPLIFIES BRIDGE REPAIRS

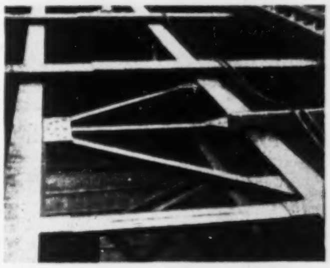


Fig. 1. Rusted-out Braces *originally riveted to flanges of bridge girders are cut out quickly with torch.*

CUTS DOWNTIME

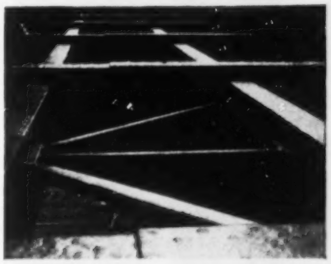


Fig. 2. Faster Construction. *Angles sawed to length are fillet welded to web of girder with Lincoln "Fleetweld 5" type electrode.*

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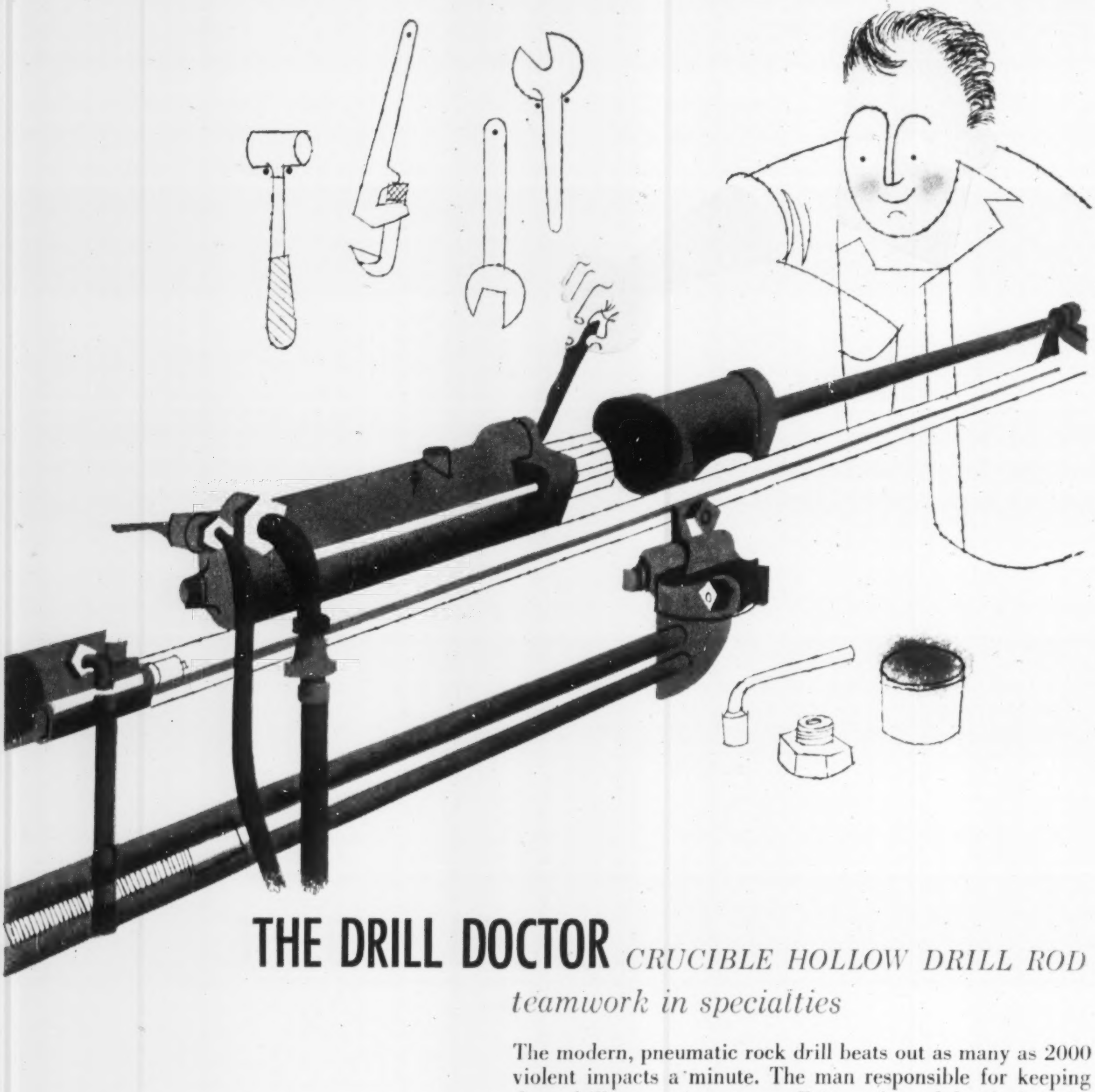

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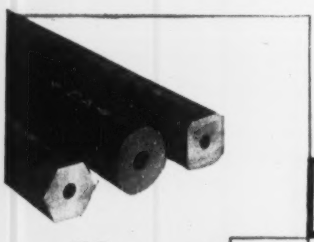
With the high cost of labor and new equipment he knows that to provide good service his drill must be made of the finest steels obtainable. That's why he counts on Crucible.

For Crucible Hollow Drill Rods have demonstrated time and time again their ability to take it . . . to withstand the severest punishment with minimum breakage and bit loss. And Crucible mills are among the few that produce steels that meet the rigid requirements of the rock drill piston – a part that undergoes the toughest service known for steel.

To get the lowest cost per foot per hole in rock drilling, specify Crucible Hollow Drill Rods.



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REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

OBITUARIES

He was in charge of the first project under the U. S. Reclamation Service, the Truckee-Carson Irrigation Project in Nevada. He was responsible for locating a Hudson River crossing for the Catskill, N. Y., Aqueduct which brought water to New York City. In the 1930's Swift was a consulting engineer for the U. S. Government and covered assignments in Alaska, Greece, Santo Domingo and Costa Rica.

Albert E. Comstock, 77, who retired in 1941 after 40 years as an engineer for the N. Y. City Board of Transportation, died March 5 at Eastview, N. Y. A graduate of Princeton, he saw service in both the Spanish-American war and the first world war.

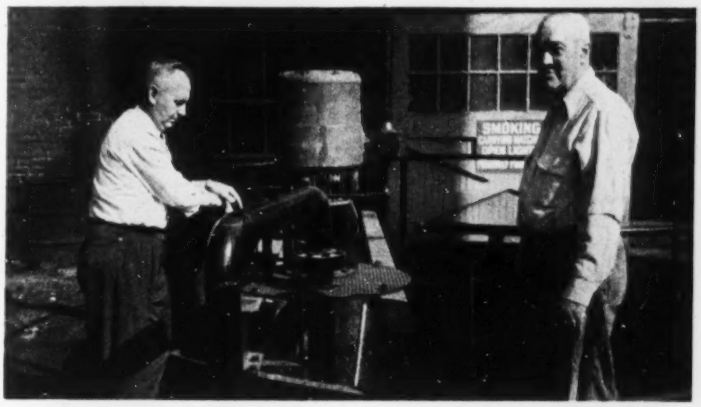
John Darcy, 58, **Marty Levine,** 42, and **Ed Roach,** 55, all officials of the Northwestern Engineering Co., Rapid City, S. D., were killed in a plane crash March 4 about 40 miles northeast of Rapid City.

J. W. Miller, 73, retired University of Washington civil engineering professor and first chief engineer for the Boeing Airplane Co., died Feb. 26 at Seattle. Graduated in engineering from the University of Nebraska in 1905, he joined the University of Washington faculty in 1909. When the Boeing company was formed during World War II, Miller became its first chief engineer and organized many of the engineering departments. He returned to the University in 1919 and the following year set up his own aircraft-manufacturing company. He re-joined the Washington faculty in 1927 and remained there until 1937.

Oscar E. Strehlow, 80, of Evanston, Ill., civil engineer, president of Walsh and Masterson Inc., foundation contractors in Chicago, died on February 28.

David E. Molin, 64, a construction engineer for Arthur G. McKee & Co. at Belencito, Colombia, was killed there in a railroad accident Feb. 26. For 18 months he had been supervising a section of the construction of a new steel plant. He had been employed by McKee for 23 years and before that was an engineer for the Austin Co.

Cecil W. Kieft, 54, chief engineer of the Middletown, Conn., Public Works Department for the last 18 years, died March 3.



Pumping Hot Tar and Water

At the Delaware Power & Light Co., Wilmington, Delaware, the Deming Vertical Sump Pump, illustrated, is proving its dependable performance.

This unit (Fig. 4620) pumps hot tar and water from a sump through 275 feet of 6" pipe, then up 20 feet into a gas holder tank. The pump is equipped with an explosion proof motor.

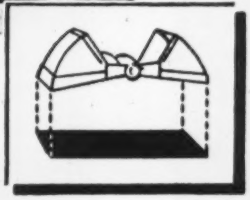
Other Deming Pumps used at this plant include four Fig. 4701 "MINUTURB" turbine pumps, two of which are used for pumping condensate from gas mains. For complete information on Deming Pumps write:

THE DEMING COMPANY
536 Broadway • Salem, Ohio

DEMING PUMPS

ERIE *Barge Type* **Bucket**

In this type the large deck area achieved means bigger payloads in stock piling and barge rehandling work. Erie's booklet on 2-line buckets gives you complete data on this type and 3 other classes of Erie Buckets. Write for copy today.



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Write for Catalog **2L-2** *Today*

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STEEL CONSTRUCTION COMPANY
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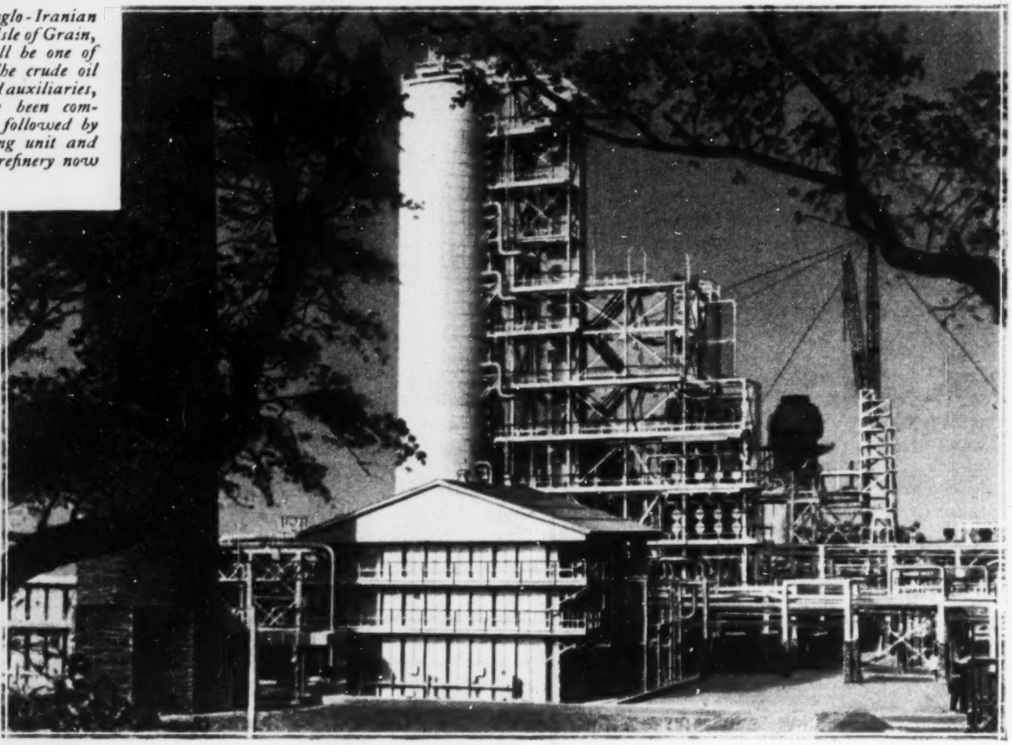
Kent Refinery of Anglo-Iranian Oil Company on the Isle of Grain, below London, will be one of Europe's largest. The crude oil distillation plant and auxiliaries, shown here, have been completed and will be followed by the catalytic cracking unit and the lubricating oil refinery now under construction.



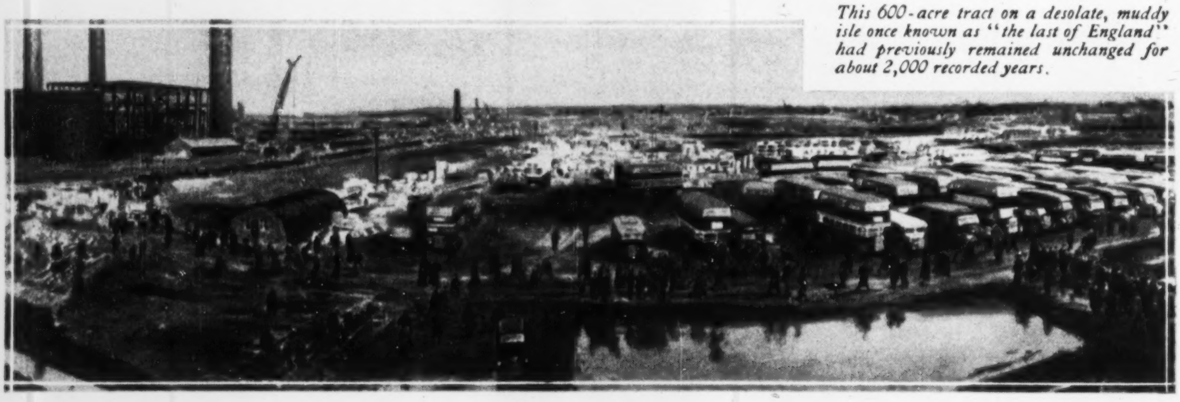
PLACING RESPONSIBILITY *to* BEST ADVANTAGE

Work of the size and complexity of the new Kent Refinery, incorporating the latest technical developments, requires control and leadership woven together detail by detail.

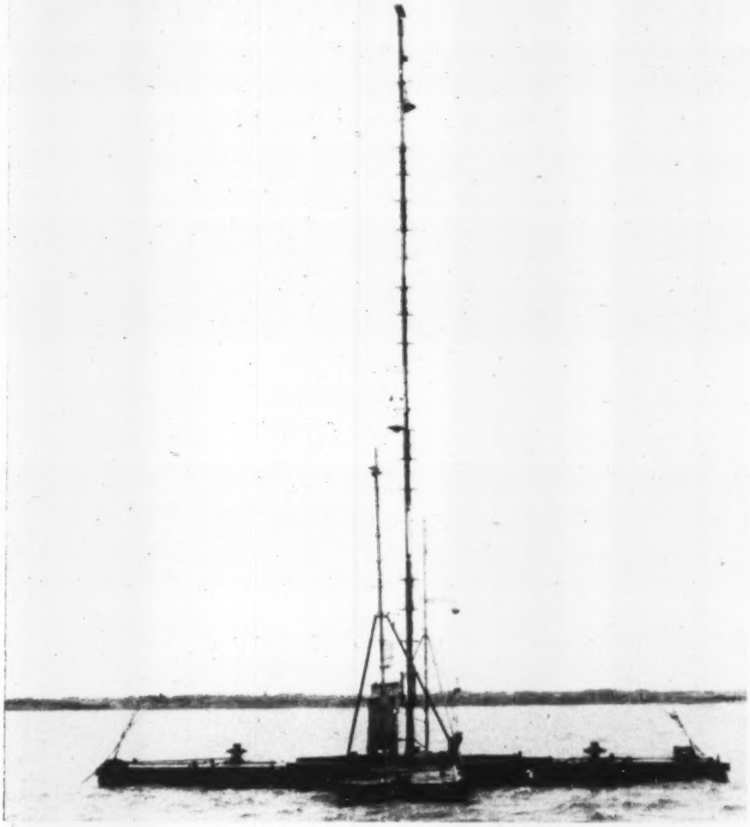
The Anglo-Iranian Oil Company determined products and processes, then placed the design of certain process units and the overall planning and erection management of the complete refinery in the hands of E. B. Badger & Sons Limited, affiliated with Stone & Webster Engineering Corporation.

The coordination of advance planning, scheduling and construction management on a realistic pattern is a sphere in which the organization has long excelled.

STONE & WEBSTER ENGINEERING CORPORATION
BADGER PROCESS DIVISION



This 600-acre tract on a desolate, muddy isle once known as "the last of England" had previously remained unchanged for about 2,000 recorded years.



MID-LAKE MOISTURE DETECTOR is alive with devices for measuring and recording factors in evaporation.

Study determines lake evaporation and tests new measurement methods

Water lost through evaporation from the surface of a lake can amount to as much as 9 in. in a month. And if the lake happens to be a large storage reservoir in an area where water is short, this loss can be critical.

These major conclusions have been drawn from a 16-month study completed jointly by researchers of the Navy, Interior and Commerce departments (ENR Feb. 5, p. 28). Climatological and hydrological data were collected at Lake Hefner, near Oklahoma City. Findings are published in a report now available issued by the Navy Electronics Laboratory (NEL Rept. 327) and the Geological Survey (USGS Circular 229, available from the Chief of Distribution, USGS, Washington 25, D. C.).

The researchers chose Lake Hefner as a nearly ideal study case. Its watershed is small; its shores are relatively clear of trees and shrubs. Water entering through a canal can be measured closely; water removed to a filter plant is metered. The lake bottom is compacted clay, nearly impervious to leakage or incoming seepage.

• Methods of measurement—In addition to findings on evaporation rates, the study also helped establish relative merits of measuring methods.

The accepted method of measuring loss from a shallow 4-ft round pan, then adjusting it to large bodies of water, was used. And some things were learned about its validity: Study of evaporation from four types of evaporation pans indicated that pan-to-lake relationships (coefficients) show pronounced seasonal variations. These variations, brought about by heat storage in the large mass of the lake, make coefficients developed from short-run tests inapplicable as annual coefficients. Mean annual coefficients are not applicable for a close estimate of evaporation for any particular month.

Two other methods of measurement, which have had theoretic support but little actual test, were given a fair try in the Lake Hefner studies.

First of these gages the "energy budget" of the reservoir. It measures incoming solar radiation, reflected radiation, energy conducted to the water a sheat, and net "advected energy" or that which is carried in or out by flow of water. This leaves as a residual the energy utilized for evaporation; and, of course, energy required for evaporating a given quantity of water is a known physical constant.

Second means tried was the "mass-transfer" method, based on measurements of air and water temperatures, humidity and wind speed. The object here was to find an equation properly relating these factors for practical use.

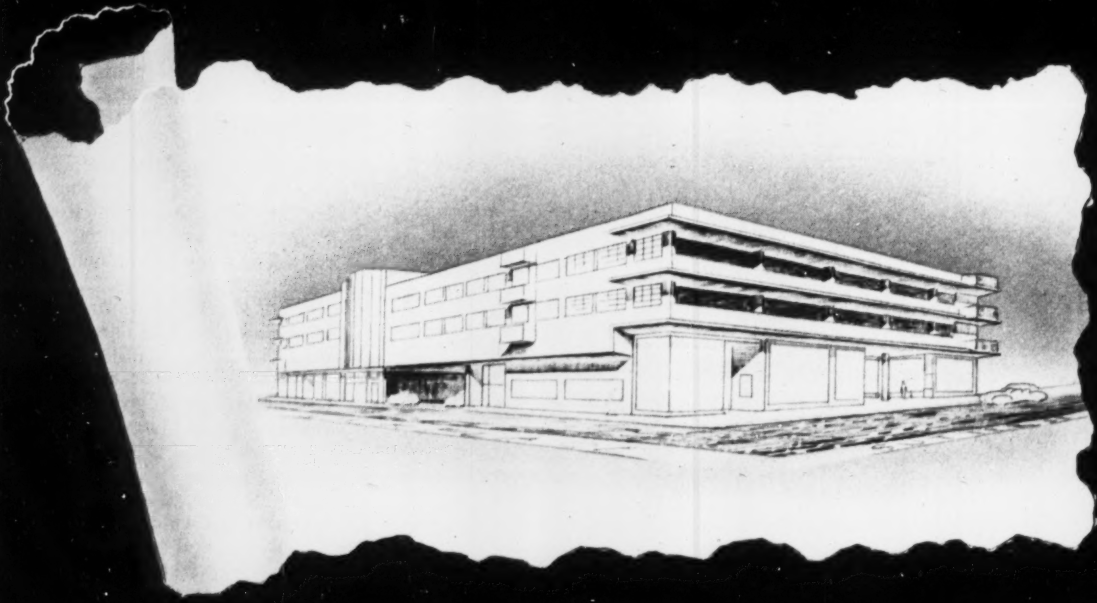
Throughout the 16-month test, it was found that 62% of the daily evaporation determinations from the pan method checked sufficiently accurately the estimates of evaporation by the mass transfer and energy budget calculations.

• Findings—Only two of the many mass transfer equations proved adequate for predicting daily evaporation accurately enough to be generally useful with equipment now available. A simple equation was developed using wind speeds and vapor pressure differences.

The energy budget equation proved satisfactory under certain conditions for figuring evaporation over periods of a week or more. Instrumentation for determining losses by the energy budget method was simplified during the tests. Expensive radiation measuring equipment was supplanted by a Cummings Radiation Integrator—a 48-in. pan 2 ft deep set on insulating concrete and surrounded by 20 in. of rock wool.

Responsible personnel were: R. W. Davenport for the U. S. Geological Survey; J. R. Riter for the Bureau of Reclamation; D. R. Russell for the Navy Electronics Laboratory; G. B. Cummings for the Navy Bureau of Ships; W. E. Hiatt for the Weather Bureau, Department of Commerce.

World's heaviest prestressed



11% savings over structural steel realized with design using Roebling Strand and Fittings

IN THE BARRETT-LICK GARAGE nearing completion in San Francisco, the plans call for a large, unobstructed space in the entrance area . . . and to achieve this, four columns from the upper stories terminate at the second floor and are carried by the heaviest prestressed concrete girders ever constructed. Prestressed concrete was chosen because it allowed adequate headroom without increasing the story height . . . and, incidentally, there was a $6,000 saving (more than 11%) over the cost estimate for an alternative structural steel design.

* * *

To meet the requirements of every prestressed concrete design, Roebling has developed a full line of products . . . Prestressed Concrete Wire and Strand for pre-tensioning . . . Strand and Fittings for post-tensioning.

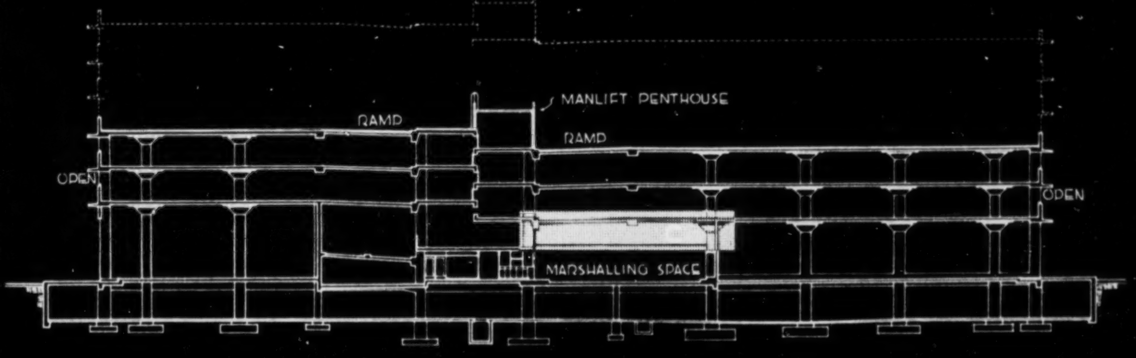
Roebling Wire and Strand for pre-tensioning are made of high tensile acid steel that results in products of high elastic characteristics. Special treating increases their bonding quality, too.

Roebling Strands for post-tensioning are fabricated from special hot galvanized acid wire, insuring extra strength and elastic properties. At recommended stresses, there is complete safety and no future relaxation of the steel. And Roebling Fittings develop the full strength of the strand without exceeding the yield point of any of their parts. They are attached at the plant and proof-loaded beyond recommended stresses.

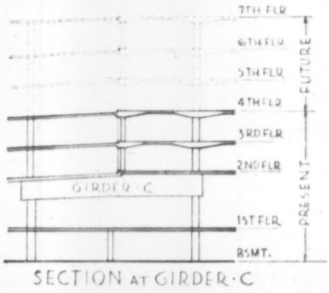
Prestressed Concrete is being more and more frequently adopted. Write for the facts and figures on Roebling Prestressing materials. Prestressed Concrete Dept., John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

A Subsidiary of The Colorado Fuel & Iron Corporation

girders for California garage


MANLIFT PENTHOUSE
RAMP
RAMP
OPEN
OPEN
MARSHALLING SPACE
0 10 20 30 40 50 FT

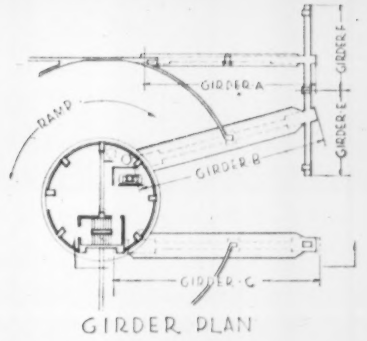
Ellison & King, Engineers • **Barrett and Hilp, Contractors**


7TH FLR
6TH FLR
5TH FLR
4TH FLR
3RD FLR
2ND FLR
1ST FLR
BSMT.
FUTURE
PRESENT
GIRDER·C
SECTION AT GIRDER·C

Open, unobstructed entrance area is indicated directly below girder "C". Note that the design includes provision for three additional stories. This section shows haunched slabs used in actual construction.

Plan view of five prestressed concrete girders, showing their arrangement to meet the free area requirements of this ultra-modern garage.

0 5 10 20 30 40 50 FT.


GIRDER A
GIRDER B
GIRDER·C
GIRDER·E
GIRDER·F
RAMP
GIRDER PLAN

ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST & 5 PITTSBURGH ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E HARBOR ST & 120 S. HEWITT ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E 2ND ST • PHILADELPHIA, 230 VINE ST • PITTSBURGH, 1301 CLARK BLDG • ROCHESTER, 1 FLINT ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, NEW JERSEY

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ROEBLING

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with WELD-CRETE!

BOND CONCRETE TO CONCRETE
OR ANYTHING ELSE!

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On piers, floors, walls, columns or wherever else you use concrete, you simply brush or spray WELD-CRETE over the old surface (old or new concrete, brick, cinder block, wood, hardboard, metal, glass, etc.) – then in 40 minutes or anytime later, you pour or trowel on your new concrete.

The bond is permanent . . . forever unbreakable . . . stronger than the concrete itself!

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The Ageless Bonding Agent for Concrete

LARSEN PRODUCTS CORP., 4934 ELM STREET, BETHSEDA, MD.

BOOKS

Text on stress and strain

ADVANCED MECHANICS OF MATERIALS—Second Edition, by Fred B. Seely and James O. Smith. 680 pp. John Wiley & Sons, Inc., New York 16, N. Y., and Chapman & Hall, Ltd., London. $8.50.

This is the first revision of this text in 20 years. Since many important contributions have been made to mechanics of materials in the interim, and since students and engineers today are better prepared for study of advanced topics, much new material has been added and the treatment of the subject has been made more penetrating and comprehensive.

The book has been expanded from four to six parts. Also, two new appendixes have been added. The principal objectives of the first edition, however, have been maintained:

1. To review and make more useful the methods and results presented in elementary courses in strength of materials.
2. To show the limitations of the ordinary formulas of strength of materials.
3. To present a more comprehensive view of fundamental concepts and methods used in stress analysis.

The new Part I discusses elementary stress formulas for static loads, stresses and strains at a point and theories of failure by yielding.

Part II covers special topics on the strength and stiffness of members subjected to static loads. It includes determination of the location of shear center, or center of twist, through which loads on a beam must pass to prevent torsion. This subject, which has come into prominence in recent years, is of importance in beams having cross sections composed of thin parts that offer large resistance to bending but small resistance to torsion, such as I-beams, channels and angles. Part II also discusses curved beams, calling atention to the fact that the conventional formula (Winkler-Bach) derived for solid sections, does not hold for I-beams, T-beams or tubular sections. Instead, a method based on the latest available information is given for computing circumferential and radial stresses in such members.

Part III deals with localized stresses and determination of stress concentration factors. Part IV covers energy methods, principally Castigliano's theorem and the dummy-load method. Part V analyzes the influence of small inelastic strains on the load-carrying capacity of structural members and presents an introduction to ultimate-

Highway profiles and grades *–even final cross sections–* from precise AERO maps

Skilled AERO mappers, working with top precision tools like the new Wild Stereoplotter A-7 below, achieve accuracy that is expanding the uses of aerial photo maps.

On a major New England highway project, detailed AERO topographic maps with 1 ft. contour intervals, were used for planning the center line profile and new highway grades.

Even the cross sections for developing bids for earth work were based on AERO contours. Checking by field surveys showed 90% of these contours to be accurate within ½ ft. in open areas.

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Call on the 34 years experience of our photogrammetric engineers.

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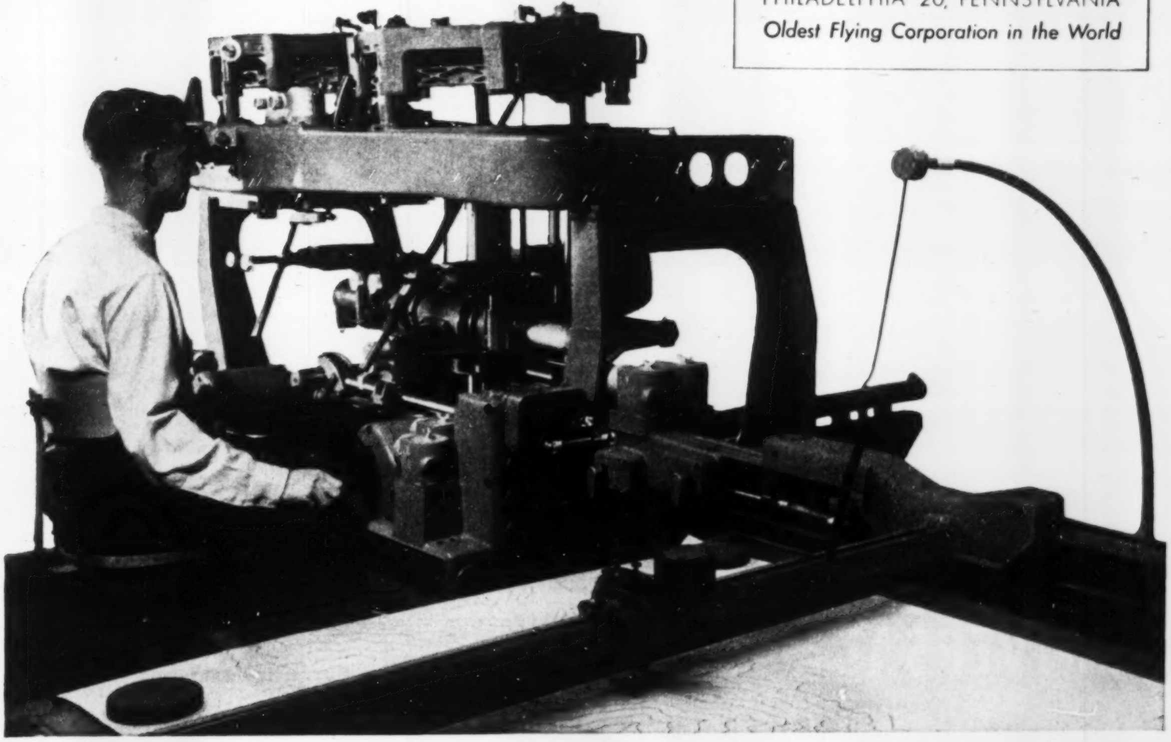
PRECISE AERIAL MOSAICS
TOPOGRAPHIC MAPS
PLANIMETRIC MAPS
RELIEF MODELS
SHORAN MAPPING

AERO
SERVICE CORPORATION
PHILADELPHIA 20, PENNSYLVANIA
Oldest Flying Corporation in the World



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no bolts to master
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No loose parts—ends of braces with locking triggers are zinc-plated, slip easily into locking sleeves on the panel legs. Finger-tip action releases the rust-proof locking trigger for easy disassembly.

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Simplified with Ezebilt SU type panels to provide open passageway thru the lifts. Four plank bearing levels available with use of side brackets.

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PROVIDE work platforms where they're needed—at safe, efficient operating levels.

Universal's NEW Ladscaf — ladder-type scaffold now available. Light-weight, low-cost, it is designed specifically for speeding-up Maintenance, Painting and Decorating work. Write for Bulletin E-3.

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ZELIENOPLE, PA.
American Tubular Elevating Towers
World's Largest Producer of Steel-Panel Scaffolding.
Distributors offer planning help and fast deliveries from sales and rental stocks—See your phone directory.

load analysis. Part VI covers buckling of columns.

One of the new appendixes is an introduction to the mathematical theory of elasticity. The second presents the elastic-membrane (soap-film) analogy for determining torsional stresses.

The book was written primarily for advanced undergraduate and first-year graduate students. But the method of presentation is such that structural designers and research engineers will find it a useful reference.

Why metals crack

FATIGUE AND FRACTURE OF METALS—Edited by William M. Murray. 313 pp. The Technology Press, Massachusetts Institute of Technology, Cambridge, Mass.; John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $6.

A great deal has been learned in the last 25 years about the nature of fatigue failures in metals. This information is summarized by various authorities in the 14 papers forming this book. The papers were originally presented in a conference on fatigue and facture of metals which was held at Massachusetts Institute of Technology in June, 1950.

To some engineers who read the book, it may be disappointing to learn that no method is available at present for assessing the exact state of fatigue damage in a structure, and predicting failure. There is no way of knowing whether a 20-year old bridge hanger can take one more truck load, or a building beam one more day of machine vibration. Also, some designers may feel frustrated on finding that they cannot design a structure economically with absolute certainty that no failure will take place; or realizing that they have to think in terms of odds of, say, 10 to 1 that no failure will occur in 20 years.

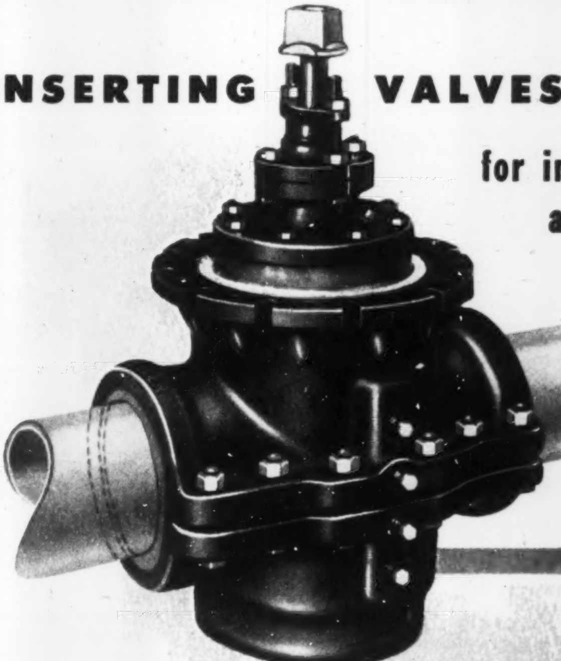
But the situation is far from discouraging. Today, the nature and mechanism of brittle fracture in normally ductile metals is better understood than most other fracture phenomena. This is brought out in the book in several papers.

Several intriguing suggestions for avoiding fatigue failures are advanced in addition to the obvious ones of minimizing notch effects and using special steels with high energy-absorption and notch toughness. One, suggested by O. J. Horger and H. R. Neifert, is to introduce favorable internal stresses into members by either cold-working or thermal processes. Another is to incorporate riveted crack arresters, as has been done for all-welded tankers.

MUELLER®

INSERTING VALVES AND EQUIPMENT

for inserting control valves where a shutdown is impractical



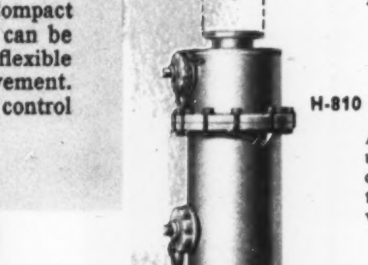
H-800 INSERTING VALVE

New smaller valve sleeve permits fast, easy installation in minimum space. Valve mechanism is the same as standard Mueller gate valve (repair parts interchangeable). Sizes 4", 6", and 8" (sizes of valves correspond to size of main).

DRILLING MACHINE

The C-C hand-operated or C-1 power-operated machine may be used for both drilling the main and inserting the valve plug. The C-1 machine may be operated either by the H-600 Air Motor or the new H-602 Gasoline Engine Drive Unit.

This new portable unit may be used to power the C-1 drilling machine. Compact and easily handled, this power unit can be used on many jobs. Its' ten-foot flexible drive shaft allows unrestricted movement. Remote control throttle permits full control of power at drilling machine.



H-810 BASIC INSERTING EQUIPMENT

An assembly of pressure confining units plus a slide valve. Permits the drilling of the main and inserting of the valve plug, easily and safely, with no water loss.

H-602 GASOLINE ENGINE DRIVE UNIT

Write for Catalog H-20 and H-602. Complete illustrated instruction manuals and parts list shipped with equipment.

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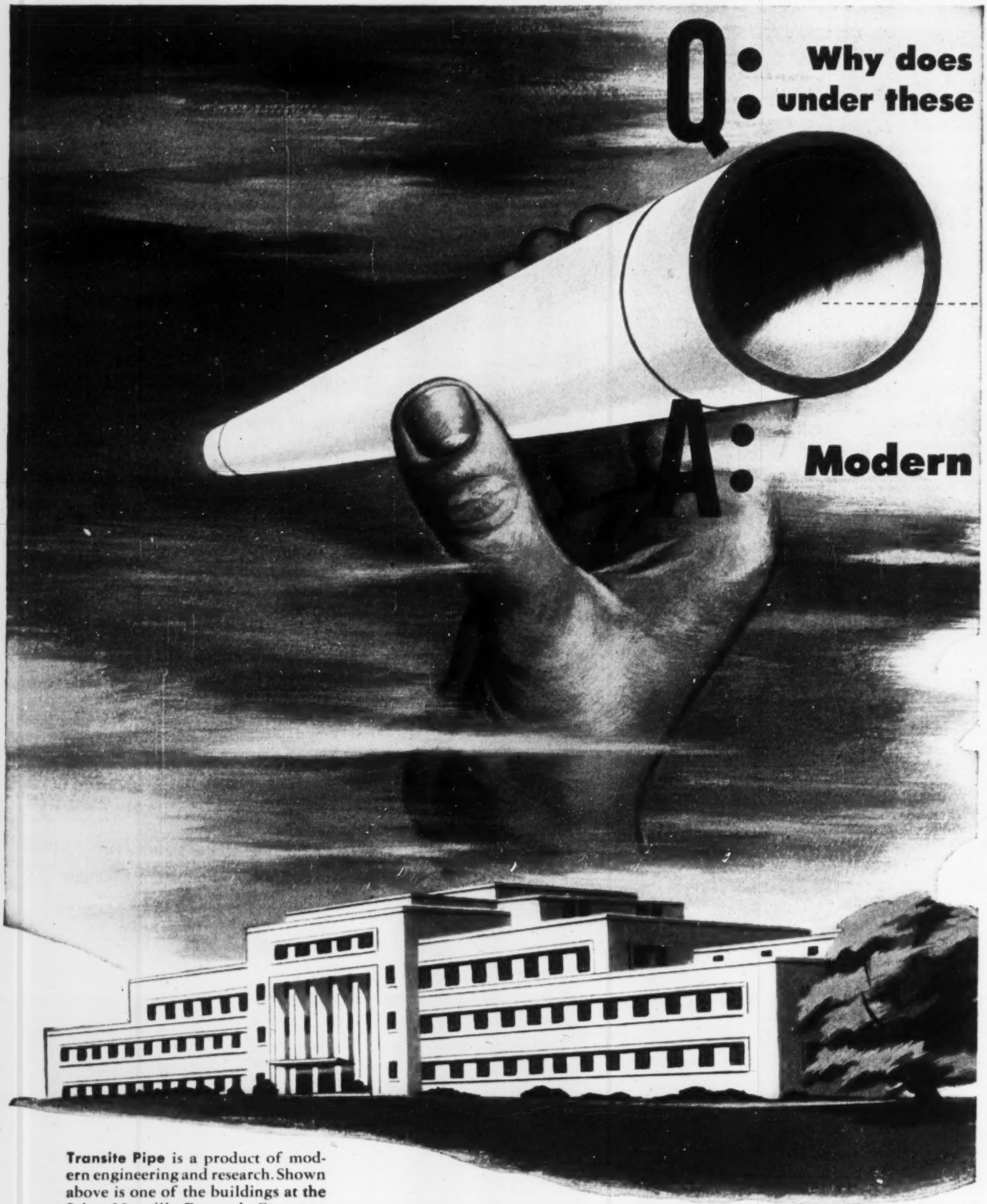

Q: Why does
under these
A: Modern

Transite Pipe is a product of modern engineering and research. Shown above is one of the buildings at the Johns-Manville Research Center at Manville, New Jersey.

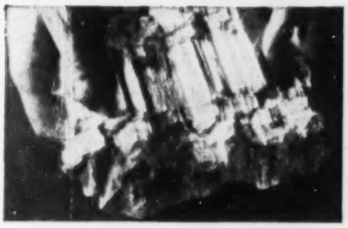
*Transite is a registered Johns-Manville trade mark

Johns-Manville TRANSITE

TRANSITE PIPE last longer California city streets? ➧

Transite Pipe was first installed by this California city nearly 20 years ago. Its lasting strength and high corrosion resistance have enabled it to outlast pipe previously used several times over.

Research designed it for lasting strength



Tough, strong asbestos fibers reinforce Transite Pipe—contribute to its high corrosion resistance and lasting strength.

TODAY, ACROSS THE COUNTRY—under countless city streets like the one shown above—Transite* Pressure Pipe is doing a highly efficient job of transporting water . . . often under conditions so adverse to ordinary pipe that engineers marvel at Transite's ability to stand up through the years!

The reason? *Lasting strength!*

Not only does Transite Pipe have the *initial* strength that's needed in a pipe intended for use under busy city streets. Equally important, it has the *lasting* strength that enables it to survive continued corrosive attack, year after year . . . to keep on giving the same dependable, economical service to the community as the day it was installed.

This highly important quality of lasting strength is one of many notable inherent advantages of a pipe engineered with modern water transportation requirements in mind. Transite's Simplex Couplings reduce leakage losses to a minimum, provide flexibility to help relieve the line of soil stresses and traffic loads. Its light weight makes for easier handling and effects substantial savings during installation. Its smooth interior assures a high coefficient of flow (C=140) and, because Transite can never tuberculate, helps keep pumping costs low through the years.

Why not get all the details . . . find out how this modern-engineered-for-the-job asbestos-cement pipe can help solve your water-line problems and *save you money?* For full information, write Johns-Manville, Box 60, New York 16, N. Y.

JOHNS-MANVILLE
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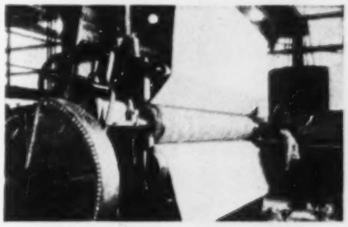
PRODUCTS



On machines like this, the asbestos-cement-silica mixture is "built up" under heavy pressure into a dense, homogeneous pipe structure.

Transite's flexible Simplex Couplings help relieve the line of excessive flexural stresses—an added safeguard against pipe failures.

asbestos-cement PRESSURE PIPE

DISCHARGE IS FAST OR SLOW,
depending on how you want it. Hydraulic controls make this possible. Mid-section pivot of loader arms give longer reach in dumping position.

STRIPPING TOP SOIL
is another job this versatile unit does well. The simple rugged design of the Ware loader correctly distributes weight on tractor frame, regardless of the operation being performed. Down-pressure can be applied when it is necessary in tough digging. Hydraulic rams absorb shock loads . . . mean longer life and lower maintenance for both tractor and loader.

HYDRAULICALLY CONTROLLED BUCKET
assures greater "breaking-out" action—full bucket loads every time. 28° roll back helps prevent wasteful spillage.

Picture Your Profits...

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OLIVER HYDRAULIC Tractor-Loader

An Oliver Industrial Wheel Tractor with this *all-hydraulic* front-end loader is a combination that's hard to beat for low-cost, profitable operation. With any Oliver Wheel Tractor, you get famous Oliver *dependable* plus power, easy maneuverability, rugged construction. With the loader, manufactured exclusively for Oliver Wheel Tractors by Ware Machine Works, you get completely hydraulic operation which means easier, surer control for more efficient digging and loading.

Take a look at the "profit pictures" shown here. They'll convince you that it's well worthwhile to ask your Oliver Industrial Distributor to arrange a demonstration of an Oliver tractor-loader combination for you.

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400 West Madison Street, Chicago 6, Illinois

A complete line of industrial wheel and crawler tractors

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Connecticut**—B.A. 3/23—First Coast Guard District, 447 Commercial St., Boston, Mass., furnish, place rip rap, repair sea will, Light Station, Watch Hill.

BIDS ASKED—BUILDINGS

Conn., Weston—SCHOOL—B.A. 3/25—Town School Bldg. Comn., Town Hall, school, south of present Junior High School. Plans deposit $35. E. F. O'Dwyer, 58 E. State St., Westport, archt. CD 9/8.

Mass., Brighton—GYMNASIUM, etc.—B.A. 3/26—Curtin & Riles, archts., 45 Newbury St., Boston, Mass., gymnasium and alterations, for St. Elizabeth's Hospital, 736 Cambridge St., Brighton, Mass. $300,000. Plans deposit $25. Former contract rescinded. CD 6/10/52, under CA.

Mass., Wilmington—SCHOOL—B.A. 3/27—Town, Supt. Schools, 159 Church St., elementary school, Wildwood St. $546,000. Plans deposit $50. Thomas Hixon Co., 1150 Commonwealth Ave., Allston, archt. CD 2/3.

SOON LETS CONTRACT—BUILDING

Me., Portland—WAREHOUSE—Burnham & Morrill Co., 45 Water St., soon lets contract 1 story, 20 ft. high, 40,000 sq. ft. brick, block warehouse addn. $200,000. Philip P. Snow, 477 Congress St., Portland, Me., engr. CD 8/18/52.

▲ **Mass., Roxbury**—FOOD TERMINAL—Massachusetts Wholesale Food Terminal, Inc., c/o Thomas Worcester Inc., archt., 85 State St., Boston, soon lets contract rein.-con. wholesale food terminal, 30 N. Central St. $2,500,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **U. S. Eng.**, 857 Commonwealth Ave., Boston, Mass., cancelled bids to have been opened Apr. 2, sewage treatment plant, Limestone Air Force Base, Eng-19-016-53-88, LIMESTONE, ME. Under **$1,000,000**. Project indefinitely postponed. CD 2-27.

▲ **R. Zoppo Co.**, 842 Boston St., Providence Hy., Norwood, Mass., CA, **$1,291,000**. Contract 31, Northeast Trunk Water Main, Birnie Ave., SPRINGFIELD, MASS. City, Water Dpt., City Hall, Springfield, Mass. Bids Feb. 9. CD 2/13, under LB.

† **Jefferson Constr. Co.**, 75 1 St., Cambridge, Mass., LB, **$663,000**, Est. Approx. $660,000, rehabilitate and addns. to structures Auxiliary Landing Field, Spec. 34833, South Weymouth, WEYMOUTH, MASS. First Naval District, 495 Summer St., Boston, Mass. Bids Mar. 3. CD 2/9.

BUILDINGS

LOW BIDS AND CONTRACTS

Brown Constr. Co., 562 Congress St., Portland, Me., LB, **$527,515**. High SCHOOL, Gorham Rd., SCARBOROUGH, ME. Town, School Bldq. Comn., Supt. Schools, Scarborough, Me. Bids Mar. 4. CD 2/25.

Construction Units, Inc., 199 Washington St., Boston, Mass., LB, **$935,504**, est. $800,000. Elementary SCHOOL addns., imprvs., Edward Devotion School, 345 Harvard St., BROOKLINE, MASS. Town Bldg. Comn., Town Hall, Brookline, Mass. Bids Mar. 5. CD 2/9.

Carlson Constr. Corp., 555 Mt. Auburn St., Watertown, Mass., CA, **$575,693**, est. $500,000 Contr. 114, BUILDING, State Pier Central St. and Water St., FALL RIVER, MASS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Dec. 23. CD 12/30, under LB.

▲ **Rich Bros. Constr. Co.**, 410 Park Square Bldg., Boston, Mass., LB, **$1,173,439**, est. $1,500,000. High SCHOOL, Main St. and Chikering Rd., NORTH ANDOVER, MASS. Town High School Bldg. Comn., 120 Main St., North Andover, Mass., Bids Feb. 26. CD 1/15.

▲ **Gilbane Building Co.**, 90 Calverly St., Providence, R. I., CA, **$1,254,000**, Oak St. SCHOOL and West Side SCHOOL, TAUNTON, MASS. City, Supt. Schools, H. H. Gallivan, Cohannet School, Taunton, Mass. Bids Feb. 25. CD 3/3, under LB.

A. F. Peaslee, Inc., 15 Lewis St., Hartford, Conn., CA, **$615,279**, Consolidated Elementary SCHOOL, adjoining Centerbrook School, ESSEX, CONN. Town Consolidated Elementary School Comr., Municipal Bldg., Essex, Conn. Bids Feb. 20, awarded Mar. 2, CD 3/4, under LB.

Wadhams & May Co., 15 Lewis St., Hartford, Conn., LB, **$889,140**, Elementary SCHOOL, Vernon & Lydall Sts., MANCHESTER, CONN. Town, Municipal Bldg., 41 Center St., Manchester, Conn. Bids Mar. 4. CD 2/16.

Moraco Constr. Co., Inc., 104 Reservoir Ave., Bridgeport, Conn., LB, **$516,000**, elementary SCHOOL Second Hill Lane Area, STRATFORD, CONN. Town Bd. Educ., N. Parade St., Stratford, Conn. Bids Feb. 26. CD 2/10.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **N. Y., Cortland**—B.A. 4/1—Fish & Wildlife Service, Dpt. Interior, 59 Temple Pl., Boston 11, Mass., macad. road at U. S. Fish Cultural Station, Inv. No. FW5-1884.

BIDS ASKED—BUILDINGS

N. J., Newark—HOUSING—B.A. 3/24—Housing Auth. of City of Newark, 57 Sussex Ave., Housing Project N.J. 2-13, administration bldg. and 4 bldgs. for 778 families. Plans deposit $50. CD 2/18, under LB.

▲ **N. J., Trenton**—ADMINISTRATION—B.A. 4/8—N. J. State Building Auth., State House, Trenton, administration bldg. for State Dpt. Educ., on campus of State Teachers College at Hillswood Lakes. $1,500,000. Plan deposit $100. Lewis C. Licht, 19 Knickerbocker Rd., Englewood, archt. CD 1/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

DeLillo Constr. Co. Inc., 71-15 51 Ave., Woodside, L. I., N. Y. LB **$1,022,300**, est. $1,307,000, elimination grade crossing of Chemung and Sayre Sts., with Penn. R. R. Horseheads-Corning, S.H. 358, Horseheads Village, S.H. 5162, Horseheads Village East Corning-Horseheads Pt. 2, 3.22 mi. PSC. 5987, FASH 53-5. FASH 53-6, FARC. 53-16, Chemung Co. Bids Mar. 5. CD 2/11.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

The Lane Constr. Corp., 37 Colony St., Meriden, Conn., LB **$1,703,617**, est. $1,923,000, New York State Thruway-Catskill Sect, Sub. 3A and 4 (Delaware Ave.-Normanskill); Southern Blvd. Interchange; Frisbie Ave. Ext.; McCarthy Ave.; Marginal Rd. "J", Thy. 2.2 mi., Acc. 1.65 mi. C. T. 53-4, C. T. 53-3P, S.T.C. 53-9, S. T. 53-10, Albany Co;

Kelleher Corp., Turners Falls, Mass., LB **$475,163**, est. $500,000, 4.65 mi. Harriscena-Fort Ann, Pt. 1, 2A and 2B, Fas. SH 53-8. Warren and Washington Counties;

Serafini Constr. Co., Inc., Conklin Rd., Binghamton, N. Y., LB **$1,930,329**, est. $2,035,000, 4.18 mi. Rochester City-Mt. Read Blvd., FAC 50-5; Mt. Read Blvd.-Lake Ontario State Parkway, Pt. 1, FASH 50-4. FAC. 53-3P, FASH 53-4P, Monroe Co.; LB **$1,337,870**, est. $1,648,000, 2.67 mi. Binghamton-Windsor, Pt. 2, S.H. 5022, FARC. 53-18, Broome Co.;

Dan-Bar Contg. Co., Inc. & W. E. O'Neil Constr. Co., 220 Pulawski St., Syracuse 4, N. Y., LB **$1,237,523**, est. $1,394,000, 2.7 mi. New York State Thruway-Ontario Sect. Sub. 8A (Mattydale Interchange), O. T. 53-2, Onondaga Co.;

Zara Contg. Co., Inc., Engel St., Hicksville, L.I., N. Y. LB **$927,125**, est. $1,059,000, 2.53 mi. Maywood-Babylon, SH 1841, Maywood-Babylon, Pt. 2, Babylon Village, SH 5299, FARC 53-4. FASH 53-2, Suffolk Co.;

John A. Borio, Inc., W. Cedar St., Poughkeepsie, N. Y. LB **$2,624,038**, est. $3,374,000, Palisades Interstate Park-Goshen, Pt. 3, (Chester-Goshen); Chester-Florida, S.H. 1809; Chester-Goshen S.H. 156; Goshen Village; S. Church, W. Main Sts. and Greenwich Ave., S.H. 1329 and 4 access roads, 4.59 Hy., 1.64 Acc. mi. FASH 53-7. FARC 53-17, Orange Co.;

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB **$4,425,394**, est. $5,227,000, New York State Thruway-Mohawk Sect. Subs. 1 and 2 (Gordon Rd.-Albany Co. line); Co. Rd. 32R; Co. Rd. 26R; Co. Rd. 24R; Mariaville Rd. Conn.; Co. Rd. 9R; Co. Rd. 7R; South Schenectady-Mariaville, SH 788; Schenectady-Duanesburg, Pt. 1, SH 880; Schenectady-Guilderland S.H. 577, Thy. 6.542 acc. 3.432 mi. M.T. 53-3, S.T. 53-7, R.C. 53-19, Albany and Schenectady Counties;

Victor C. Arzani Contg. Co., 2507 James St., Syracuse 6, N. Y., LB **$493,657**, est. $496,000, separation of grades Oswego City, State Road and N.Y.O. & W. R.R., Oswego City; State Rd.; Oswego-Mexico Pt. 1, SH 509, 1.37 mi. FAGC, 53-4, FAC 53-5, FARC. 53-14, Oswego Co.;

Jess F. Howes, Sidney Center, N. Y., LB **$499,557**, est. $550,000, 3.58 mi. Cadosia-Granton, FASSH. 53-3, Delaware Co.;

B. Perini & Sons, Inc., 73 Montwait Ave., Framingham, Mass. LB **$7,948,186**, est. $9,481,000, New York State Thruway-Mohawk Sect. Sub. 12D and 13A Fort Plain-Randall); Canajoharie Interchange; 5 access drives; Fort Plain-Canajoharie, Canajoharie-Fultonville, Pt. 1, S.H. 8348, Canajoharie-Fultonville, Pt. 2, SH 8371. 10.4 mi. Thy., 3.33 mi. Acc., M.T. 53-4, S.T. 53-8, R. C. 53-21, Montgomery Co.; Bids Mar. 5. CD 2/11.

Edward Acker Corp. and South Shore Contg. & Dredging Corp., 100 West Ave., Paitchogue, N. Y., LB. **$377,566**, est. $552,050, Moriches Inlet (West Side), B.P. 53-50, Suffolk Co., NEW YORK. State Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Mar. 5. CD 2/18.

Comrs. **South Huntington Municipal Water Dist.**, Huntington Station, N. Y., rejected bids Mar. 10, South Huntington WW admin. bldg. and garage addn. HUNTINGTON STATION, N. Y. CD 2/12.

Tully & Di Napoli, Inc., 127-50 Northern Blvd., Flushing, N. Y., LB. **$376,998**, Contr. 1002-2T-14 trunk sewer line from Garden City to Herricks MINEOLA, N. Y. Bd. Supervs. Nassau Co., Old County Court House, Franklin Ave., Mineola, N. Y. Bids Feb. 26. CD 2/18.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **John Kinner & Assoc., Park Ave., Corning, N. Y.**, CA **$1,429,340** Junior-Senior High SCHOOL and bus GARAGE, BATH, N. Y. Bd. Educ., Central School Dist. No. 2 of Towns of Bath, Cameron, Wheeler, Urbana, Thurston, Avoca and Howard, High School Bldg., Bath, N. Y. Bids Feb. 3, awarded Feb. 16. CD 2/17, under LB.

C. Rolland Oswald, 21 John St., Schenectady, N. Y., LB, **$788,576**. 1 story, brick, steel elementary SCHOOL, COLONIE, N. Y. North Colonie Central School Dist., Lathams, N. Y. Dodge W. Parker & Assoc., 109 State St., Albany, N. Y., archts.

▲ **William E. Bouley Co. Inc.**, 33 William St., Auburn, N. Y. CA. **$3,913,837**, Community War MEMORIAL, ROCHESTER, N. Y. Div. Purchase & Supply, 37 City Hall, Rochester, N. Y. Bids Jan. 6, awarded Jan. 29. CD 11/18.

▲† **Blake Constr. Co.**, 33 "E" St. S.W. and **D. B. Lyons**, 1254 23 St. N.W., Wash., D. C., LB **$1,414,000**, Base Bid 1-2-3, PLANT and Science laboratory Eng. 49-080-53-9 (9); soil preparation bldg., Eng. 49-080-53-10 (10); classified bldgs., Eng. 49-080-53-66 (58) CAMP DETRICK, MD. U. S. Eng., First and Douglas Sts. N.W., Wash., 25, D. C. Bids Mar. 5. CD 2/9

Kirby & McGuire, Inc., 2518 Greenmount Ave., Baltimore, Md., LB. **$689,540**, Berkshire Elementary SCHOOL, TOWSON, MD., Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Feb. 25. CD 2/9.

† **F. H. Martell Inc.**, 1023 20 St. N.W., Wash., D. C., LB. **$978,200**, Alternate A, add **$4,600**; Alternate B, add **$7,000**. LAW SCHOOL, Howard University, 6 St. and Howard Pl. N.W., WASH, D. C. General Services Admin. P. Bldg. Services, General Services Bldg., 19 and F Sts. N.W., Wash., 25, D. C. Bids Mar. 5. CD 2/6.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Ky., Mayfield—B.A. 3/25—City, Scott Lemon, mayor, sewage treatment plant, sanitary sewers, 2 sewage lift stations and appurtenances, 35,657 lin. ft. 8 in. vitr. clay pipe. Plans deposit $20. Russell, Axon & Assocs. 408 Olive St., St. Louis, 2, Mo., engrs. CD 1/29.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

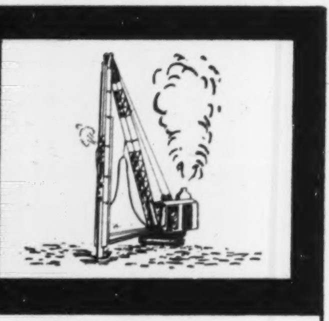
CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

DIFFICULT FOUNDATION WORK



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† **Louisiana**—B.A. 3/25—U. S. Eng., foot of Prytania St., New Orleans, approx. 375,000 cu. yd levee embankment, Type 2 fill and 5,120 lin. ft. gravel surf. hy. on East Atchafalaya River Levees, Inv. No. 53-171, Point Coupee Parish. CD 6/26/46.

La., Monroe—DORMITORIES—B.A. 3/26—Officer in Charge of Construction, Eighth Naval Dist., U. S. Naval Station, 600 South St., New Orleans, airmen's dormitories, incl. 11 wood 2 story bldgs., 37x224 ft. incl. grading, gravel walks, drives, etc. Selman Air Force Base, Spec. 36785. Plans deposit $50. CD 12/4.

† **S. C., Charleston**—PORCHES and TILE SHOWERS—B.A. 3/31—Dpt. Navy, Officer in Charge of Construction, Bldg. 12, U. S. Naval Base, Charleston, concrete porches and tile showers on Bldgs. 1162, 1163, 1164, 1165, 1144, 1160, 1161, 1186 and 1188, NOY 77334. Plans deposit $10. CD 6/25.

BIDS ASKED—BUILDINGS

Ga., Macon—SCHOOL—B.A. 3/24—Bibb Co. Bd. Educ., Court House, Macon, Hightower Road School. $325,000. CD 1/22/48.

La., New Orleans—SCHOOL, etc.—B.A. 4/1—Frances Z. Cabrini School, c/o Curtis & Davis, archts., 822 Perdido St., parochial school and rectory. $300,000.

† **Ga., Albany**—CAFETERIA—B.A. 4/2—Dpt. Navy, Officer in Charge of Constr., Box 365, Naval Base, S. C., civilian cafeteria, Marine Corps Depot of Supplies, Spec. 37001. CD 2/5/51.

Ga., Atlanta—WAREHOUSE—B.A. 4/2—Peaslee-Gaulbert Corp., Whitehall St. S.W., warehouse addn. $150,000. Plans deposit $25. Abreu & Robeson, Inc., 141 Walton St. N.W., archt.

† **Ky., Richmond**—STORAGE BINS—B.A. 4/2—U. S. Eng., 830 W. Broadway, Louisville, Ky., storage bins for popping plant, Blue Grass Ordnance Depot, Serial No. ENG 15-029-53-61.

▲ **Tenn., Nashville**—HIGH SCHOOL—B.A. 4/2—Davidson Co. Bd. Educ., Court House, rebuild Hillsboro High School. $1,055,000. Plans deposit $300. Edwin A. Keeble, Cotton States Bldg., archt. CD 1/28.

† **Ky., Richmond**—BUILDING REMODELING—B.A. 4/7—U. S. Eng., 830 W. Broadway, Louisville, remodeling Bldg. No. 214, Blue Grass Ordnance Depot, Serial No. ENG 15-029-53-42.

Va., Luray—PLANT—B.A. 4/15—Blue Bell, Inc., Jefferson Bldg., Greensboro, N. C., plant. $500,000. Stainbeck & Scribner, 112 3rd St. N. E., Charlottesville, archts. CD 3/2.

SOON LETS CONTRACT—BUILDINGS

Ga., Columbus—VEHICLE GARAGE—Wells Dairies, c/o E. Oren Smith, archt., 1236 Wildwood Ave., soon lets contract, vehicle garage, $100,000. CD 3/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh,

Bituminous Concrete Constr. Co., Inc., Whitmire, S. C. CA. **$512,313,** est. $400,000-$500,000, grading, stabil. aggregate base, bit. surf. tr. and structures 14.11 mi. Hy. Proj. 4862, Wake and Franklin Counties. Bids Feb. 24, awarded Mar. 4. CD 2/27, under LB.

Comrs. Abbeville Co., Abbeville, S. C. Owner Builds. **$64,000,** imprv. county roads, ABBEVILLE, S. C.

Herman-Sipe & Co, Hickory, N. C. CA. **$83,045,** swimming pool, HICKORY, N. C. City, Hickory, N. C. Bids Mar. 2.

† **L. A. Tvedt,** 10 N Main Bldg., Memphis, Tenn., LB. **$517,486,** power and sluice tunnels, Buford Dam on Chattahoochee River, Buford, Inv. 53-53, GEORGIA. U. S. Eng., P.O. Box 1169, Mobile, 7, Ala. Bids Mar. 3. CD 2/3.

Georgia Dpt. State Parks, State Capitol, Atlanta, Ga., rejected bids Feb. 9, swimming pool and bath house Georgia Veterans Memorial State Park, CORDELE, GA. (Correction-status). CD 2/13, under CA.

† **Wright Contg. Co.,** 504 25 Ave., Columbus, Ga. LB. **$122,336,** calibration yard, Hunter Air Force Base, Inv. 53-49, SAVANNAH, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Feb. 26.

Lofera Contg. Co., 601 N.W. 20 Ave., Miami, Fla., LB. **$127,272,** sidewalk improvements in Districts SK-124 and SK-137, MIAMI, FLA. City, Div. Eng., 3332 Dinner Key Dr., Miami, Fla. Bids Mar. 4. CD 2/26.

▲ **MISSISSIPPI**—State Hy. Comn., State Office Bldg., Jaskson,

Texas Constr. Co., 1909 N. Harwood St., Dallas, Tex. CA. **$1,304,314,** bridge over West Pascagoula River; CA **$2,614,852,** bridge over East Pascogoula River, Jackson Co.;

Jahncke Services, Inc., 814 Howard Ave., New Orleans, La. CA **$2,039,650,** roadway more than 3 mi. between the bridges, Jackson Co. Bids Feb. 24. CD 2/27, under LB.

▲ **Mills & Jones, Inc.,** 2260 4 Ave. S., St. Petersburg, Fla., LB. **$859,219,** structural work;

Silvis Co., 1128 Geele Ave., Sheboygan, Wis., LB. **$1,185,995,** mechanical work;

Burford, Hall & Smith, Edgewood Ave. N.E., Atlanta, Ga., LB. **$69,058,** pumps;

Climax Eng. & Pump Mfg. Co., 208 S. La Salle St., Chicago, Ill., LB. **$60,101,** generators;

Whitmore Eng. Co., Langford Bldg., Miami, Fla., LB. **$194,485,** electrical work, for water supply imprvs. ST. PETERSBURG, FLA. City, City Hall, St. Petersburg, Fla. Bids Feb. 26. CD 1/6.

M. & W. Contr. Co., Tupelo, Miss., CA. **$76,700.** county roads 5.018 mi. imprvs.;

Paul Anthony Constr. Co., Tupelo, Miss., CA. **$81,401.** bridge and approaches on county road, Proj. S 812-2. PITTSBORO, MISS. Bd. Supervs., Calhoun Co., Pittsboro, Miss. Bids Mar. 2. CD 2/17.

† **U. S. Eng.**, foot of Prytania St., New Orleans, La., cancelled bids to have been opened Mar. 3, Wax Lake West Drainage Structure, St. Mary Parish, Inv. No. 53-154, LOUISIANA. CD 2/3.

▲ **L. E. Farley, Inc.**, 2609 Sunset Blvd., Houston, Tex. CA. **$1,000,000**. 55 mi. 16 in crude oil trunk line from Raceland to Plaquemine, LOUSIANA. Interstate Oil Pipe Line Co., c/o Standard Oil Bldg., Shreveport, La. CD 8/21.

T. L. James & Co., Ruston, La., CA. **$175,420**, approx. 41,990 sq. yd. concrete pavement and all work incidental thereto, NEW IBERIA, LA. City, City Hall, New Iberia, La. Bids Mar. 2. CD 2/10.

BUILDINGS

LOW BIDS AND CONTRACTS

Public Housing Admin., 900 N. Lombardy St., Richmond, Va., postponed indefinitely bids to have been opened Feb. 17, 250 portable family units, HOUSING, utilities and site work, Defense Housing Proj. 8D1, Camp Pickett, BLACKSTONE, VA. CD 1/28.

▲ **Westinghouse Electric Corp.**, P.O. Box 868, Pittsburgh, Pa., CA. generator unit and equip.;

Stone & Webster Engr. Corp., 1403 Roseneath Rd., Richmond Va., CA. installation and general constr. (2nd unit) for Portsmouth POWER PLANT addn., double capacity to 220,000 kw. near PORTSMOUTH, VA. Virginia-Electric & Power Co., Boush & Bute Sts., Norfolk Va. Total est. **$16,000,000-$17,000,000**, CD 2/9/51, under Va., Norfolk-Portsmouth.

S. Waranch, Roosevelt Contg. Co., Halprin Dr., Norfolk, Va. Owner Builds. **$960,000**. 120 RESIDENCES, NORFOLK, VA.

George W. Kane, Greensboro, N. C., CA **$315,000**. MOTOR COURT, DURHAM, N. C. Carolina Motor Inn, Inc., c/o contractor.

Carolina Warehouse Co., Lumberton, N. C. Owner Builds. **$95,000**, WAREHOUSE addn., LUMBERTON, N. C.

Liberty Warehouse Co., Lumberton, N. C. Owner Builds. **$85,000**. tobacco WAREHOUSE addn., LUMBERTON, N. C.

Coggins Constr. Co., 1900 Hillsboro St., Raleigh, N. C. CA. **$325,000** APARTMENT DEVELOPMENT, RALEIGH, N. C. Wake Supply Co., c/o contractor.

Jones Bros., Wilson, N. C. CA. **$314,326**, HOSPITAL addn., ROANOKE RAPIDS, N. C. Roanoke Rapids Hospital, Roanoke Rapids, N. C. Bids Feb. 27. CD 1/28.

▲ **Geo. A. Fuller Co.**, Munsey Bldg., Wash., D. C., LB, **$9,734,000** Eugene Talmadge Memorial HOSPITAL, AUGUSTA, GA. State Hospital Auth., State Capitol, Atlanta, Ga. Bids Mar. 6. CD 1/26.

Jerome Constr. Co., 14 N. Abercorn St., Savannah, Ga., Owner Builds. **$400,000**. 75 RESIDENCES, AUGUSTA, GA.

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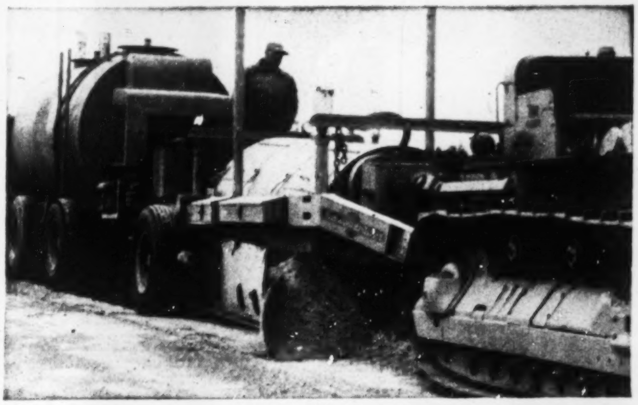

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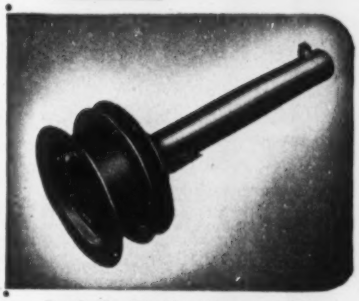

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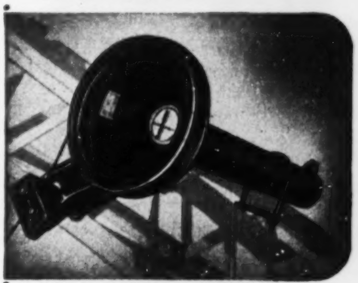

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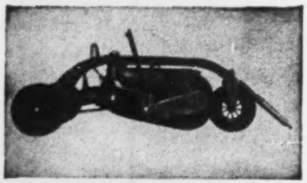

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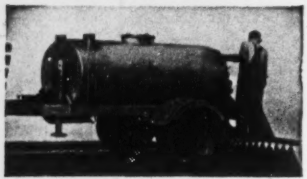

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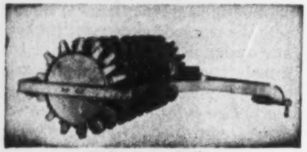

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Louis Briggs Constr. Co., 3984 Emory Dr., Mason, Ga., CA, **$321,355**, Pio Nono Negro SCHOOL MACON, GA. Bibb Co. Bd. Educ., Court House, Macon, Ga. Bids Mar. 3. CD 1/22/48.

David W. Thornton, 762 Cherry St., Macon, Ga., Separate Contracts, **$850,000**, 150 RESIDENCES, MACON, GA.

Beeler & Higgs, 1401 Campbell Ave., Jacksonville 7, Fla., LB, **$391,802**, Negro SCHOOL, Forest and Goodwin Sts., JACKSONVILLE, FLA. Bd. P. Instruction, 605 Ocean St. Jacksonville 2, Fla. Bids Mar. 4. CD 2/4.

Hilbert Sapp, Orlando, Fla., Owner Builds, **$400,000** 53 addn. RESIDENCES, LAKELAND, FLA.

Southern Home Builders Corp., 535 Caligula Ave., Coral Gables, Fla., CA, **$400,000**, 50 RESIDENCES, MIAMI, FLA. Shermac Corp. c/o contractor.

Edward J. Gerrits, 3455 N. W. 2 Ave., Miami, Fla., CA, **$300,000**, Parochial SCHOOL MIAMI, FLA. Holy Redeemer Church, c/o contractor.

Beall Constr. Co., Sarasota, Fla., Owner Builds, **$400,000**, OFFICE, SARASOTA FLA.

Bernard & Byrd, P.O. Box 1688, Mobile, Ala., CA, **$644,841**, Trade SCHOOL MOBILE ALA. Alabama State Bd. Educ. 3630 S. Perry St., Montgomery, Ala. Bids Feb. 27. CD 3/6, under LB.

Bear Bros., 25 E. Jefferson St., Montgomery, Ala., CA, **$331,650**, Capital Junior High SCHOOL addn., MONTGOMERY, ALA. Montgomery Co. Bd. Educ., Court House, Montgomery, Ala. Bids Mar. 2.

Shelby Constr. Co., 1106 Canal St., New Orleans, La., CA, **$400,000**, SHOPPING CENTER JACKSON, MISS. Northwood Shopping enter, Inc, c/o contractor.

Southern Constr. Co. Columbia, Miss., LB. **$304,340**, HOSPITAL, COVINGTON, LA. St. Tammany Parish Police Jury, Covington, La. Bids Mar. 2. CD 2/3.

Schill-Wolfson, 2600 Poydras St., New Orleans, La., Owner Builds. **$400,000**. 46 RESIDENCES, KENNER, LA.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ Ill., **Chicago**—B.A. 3/24—City, City Hall, Wrightwood Auxiliary Sewer, Logan Blvd. and Wrightwood Ave. to Whipple St. $1,750,000. CD 1/21.

Wis., **Milwaukee**—B.A. 3/25—City, City Hall, repairs, alterations to south side of Wisconsin Ave. Viaduct. $160,000. Plans deposit $10. Lloyd D. Knapp, city engr. CD 4/14/43.

Wis., **Watertown**—CLEARING, etc.—B.A. 3/26—City, City Hall, clearing, grading, drainage for municipal airport. Plans deposit $15. Green Eng. Co., 1419 University Ave., Middleton, engr. CD 1/26/45.

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BIDS ASKED—BUILDINGS

† **Ill., Hanna City**—MESS HALL—B.A. 3/25—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, mess hall extension in vicinity of Hanna City, Serial No. ENG 11-032-53-68.

Wis., Waukesha—SCHOOL—B.A. 4/6—Bd. Educ., Waukesha, elementary school. $400,000. Ebling, Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, Zone 2, archts. CD 12/29.

O., Maple Heights—SCHOOL—B.A. 4/7—Bd. Educ., Maple Heights, Dunham Road Elementary School addn. $450,000. Plans deposit $20. Outcalt, Guenther & Assoc., 13124 Shaker Square, Cleveland, archts. CD 10/15.

Wis., West Bend—SHOP—B.A. 4/15—Washington Co., West Bend, 2 story, 116x153 ft., rein.-con., steel, brick hy. shop addn. $225,000. V. H. Esser, 4061 N. Prospect Ave., Milwaukee, Zone 11, archt. CD 7/3/52.

Ill., Lake Forest—SCHOOL—B.A. Late in July—School District 67, 400 E. Illinois St., school, Deerpath Rd. near Route 41. Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, archts. CD 10/22.

Ill., Tonica—SCHOOL—Bids Asked—School District 79, Bondi Bldg., Galesburg, 1 story, part, bsmnt., brick, concrete grade school. $400,000. Leslie R. Winsauer, Bondi Bldg., Galesburg, archt.

Mich., Dearborn—HIGH SCHOOL, etc.—Bids Asked—Convent of Sacred Heart Parish, 11515 Woodrow Wilson St., Detroit, 2 story, brick, steel, concrete high school and auditorium. $300,000. Herman & Simons, 804 Transportation Bldg., Detroit, archts.

SOON LETS CONTRACT—BUILDINGS

Ill., Chicago—WAREHOUSE, etc.—Continental Distributing Co., 514 W. Erie St., soon lets contract Warehouse and office, $750,000. A. Epstein & Sons, 2011 Pershing Rd., Zone 9, archts. CD 11/13.

Ill., Cicero—FACTORY—Royal Continental Box Co., 2214 W. Fullerton St., Chicgao, soon lets contract box factory, 47 St. and 13 St. Emil L. Larson, 4814 N. Damen St., Chicago, Zone 40, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—State Hy. Dpt., State Office Bldg., Columbus,
W. L. Harper Co., 2910 Highland Ave., Cincinnati, O. LB **$467,387**, est. $440,530, Type T-71, 1.378 mi. USR 23-(6.96-7.45), A-F-538 (10), Village of Piketon, Pike Co.;

The W. J. Seidensticker Co., 209 S. High St., Columbus, O., LB **$454,719**, est. 453,460 Type T-35 on B-70 and structures 1.122 mi. USR 23-(11.60-12.70), A-F-538 (9), Village of Waverly, Pike Co.;

Ohio Asphalt Paving Corp., 823 Prospect St., Portsmouth, O., LB **$453,075**, est. $375,950, Type T-35 on B-70, 1.78 mi. USR 23-3.36, A-F-626 (15), Scioto Co. Bids Mar. 3. CD 2/16.

OHIO—State Hy. Dpt., State Office Bldg., Columbus,
Baker & Hickey Co., P. O. Box 5008, Tri-Village Station, Columbus, O., LB **$548,769**, est. $564,480, structure, 0.14 mi. USR 23-8.63, A-F-538 (8), Village of Piketon, Pike Co. Bids Mar. 3. CD 2/16.

Frank Messer & Sons, Inc., Paddock Rd., Cincinnati, O. CA. Approx. **$200,000**, Vine St. stadium and lighting sys.; grading, water lines, sewer lines, tile drains, meters, CINCINNATI, O. Roger Bacon High School, 4316 Vine St., Cincinnati, O. J. R. Biedinger, Traction Bldg., Cincinnati, O., engr. Awarded Mar. 4. CD 1/9/50.

† **George Sheaf & Co.**, 449 Nielston St., Columbus 3, O., LB **$445,699**, est. $438,606, 1 story, 30,000 sq. ft. aero-medical engineering laboratory, Wright-Patterson Air Force Base, ENG 15-029-53-3, DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Mar. 3. CD 1/30.

† **W. L. Harper Co.**, 2910 Highland St., Norwood, O. CA **$467,387**, grading, draining, concrete paving 1.37 mi. PIKETON, O. Atomic Energy Comn., 1901 Constitution Ave. N. S. Wash. 25, D. C. Awarded Mar. 3.

Thos. H. Bentley & Son, 3131 W. Mill Rd., Milwaukee, 9, Wis., LB, **$113,430**, general contract superstructure for incinerator, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Feb. 27. CD 2/18.

Speedway Contg., 1335 N. 3 St., Milwaukee, 12, Wis., CA, **$122,825**, sewers in N. 19 St. and W. Honey Creek Dr., MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Feb. 20. CD 2/18.

▲ MICHIGAN—State Hy. Dpt., Charles M. Ziegler, chn., 220 Townsend St., Lansing, Zone 13,
Louis Garavaglia, 24240 Mound Rd., Center Line, Mich., and Denton Constr. Co., 7-170 General Motors Bldg., Detroit, Mich., CA. **$1,289,200**, grading, draining 0.114 mi. and 36 ft. c. conc. paving service roads, ramps and utilities, 0.869 mi. G-D dual 36 ft. c. conc. ramps, service roads, utilities, BUI 82-64 C28 (BUI 391-52), BUI 82-65 C7 (BUI 391-52), Wayne Co.; E. P. Brady Co., Flint, Mich., CA. **$89,150**, grav. resurfacing Gladwin Rds., Montmorency, Alcona Rds., Lapeer, Osconda and Alpena Rds., various counties. Bids Feb. 25. CD 3/4, under LB.

Consumers Power Co., Central Div., H. L. Ziegenbein, mgr., Jackson, Mich., Owner Builds, **$160,000**. gas supply facilities, gas lines and imprvs. Greenville, MICHIGAN. CD 2/25/53.

Ray D. Baker Contractor Inc., 19200 W. Eight Mile Rd., Detroit, 19, Mich., CA. **$127,873**, sewage treatment plant, 1,400 ft. 6 in. c.i. force main, pumping station, 2,300 ft. 10 in. vitr. sewer, MILFORD, MICH. Huron-Clinton Metropolitan Auth., P. K. McWethy, secy., 1750 Guardian Bldg., Detroit, Mich. Bids Feb. 10, awarded Feb. 12. CD 1/21.

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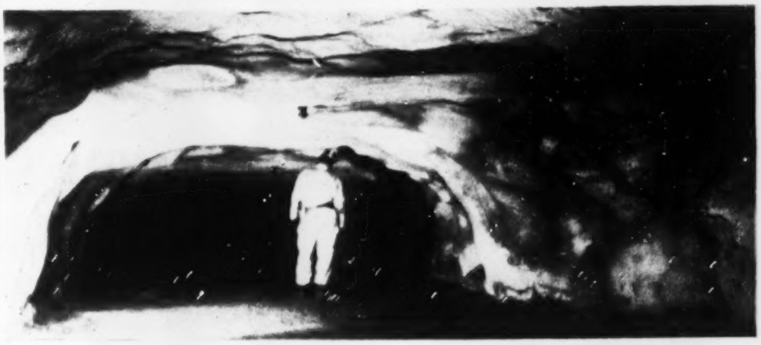

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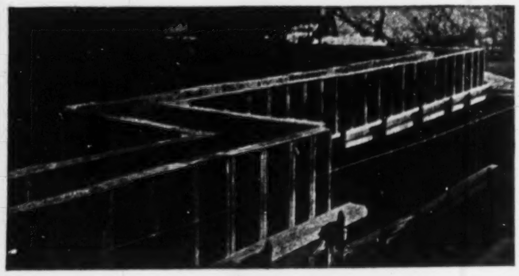

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BUILDINGS

LOW BIDS AND CONTRACTS

▲ **H. L. Vokes Co.**, 1000 Wayside Rd., Cleveland, O. CA Approx. **$1,000,000.** 1 story, 100,000 sq. ft. brick, stone, FACTORY and OFFICE bldg., on 18-acre site on Brookpark Rd. near W. 150 St., Brook Park, CLEVELAND, O. Cleveland Steel Products Corp., 7306 Madison Ave., Cleveland, O.

▲ **Clifton Park Apartments, Inc.**, 374 N. Virginia Rd., Columbus, O., Owner Builds. **$1,170,000.** eighteen 3 story brick APARTMENTS, COLUMBUS, O.

Bolton-Pratt Co., 1276 W. 3rd St., Cleveland, O., CA Approx. **$750,000.** Automatic distr. (electric power) SUB-STATION, incl. 1 story, 24x72 ft. bldg. at 20600 Center Ridge Rd., on 1.35 acre site, ROCKY RIVER, O. Cleveland Electric Illuminating Co., Public Square, Cleveland, O. Awarded Mar. 3. CD 11/17.

Allied Builders, Inc., Lebanon, Ind. Owner Builds. **$600,000,** 50 HOMES, FRANKFORT, IND.

Hancock County Development Co., 36 N. State St., Greenfield, Ind., Owner Builds. **$450,000.** 20 stone RESIDENCES, GREENFIELD, IND.

JED Constr. Co., 506 Lemcke Bldg., Indianapolis, 5, Ind., Owner Builds, **$500,000,** 50 HOMES in Ralston Addn., INDIANAPOLIS, IND.

Regent Constr. Co., 262 Bradley St., Indianapolis, 10, Ind. Owner Builds. **$480,000,** 40 RESIDENCES, INDIANAPOLIS, IND.

Allied Builders, Inc., Lebanon, Ind., Owner Builds. **$600,000,** 50 National HOMES in Ulen District, LEBANON, IND.

R. L. Steinberger, Third and Broad Sts., Logansport, Ind., Owner Builds. **$300,000,** 25 HOMES, LOGANSPORT, IND.

† **J. L. Simmons Co., Inc.**, Marion, Ind., LB. **$677,000.** DINING HALL addns., alterations, Bldgs. 16 and 122 Veterans Administration Hospital, MARION, IND. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Mar. 3.

Forest Jake Webber, Plainfield, Ind., Owner Builds. **$300,000,** 25 National HOMES, PLAINFIELD, IND.

Community Homes, Inc., Whiteland, Ind., Owner Builds. **$350,000,** 30 HOMES in Maplecrest Addn., WHITELAND, IND.

Glenn Mills, Inc., 16104 Ecorse St., Allen Park, Mich., Owner Builds. **$800,000.** brick housing, Allen, Reeck and Southfield Rds., ALLEN PARK, MICH.

▲ **B. L. Smokler & Co.**, 1200 Penobscot Bldg., Detroit, Mich. Owner Builds. **$1,300,000.** 125 brick single HOUSES, Leslie and Allen Rds., ALLEN PARK, MICH.

▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. CA **$1,994,394,** 4 story with two 1 story wings, brick, steel, concrete, 150 bed capacity PSYCHIATRIC HOSPITAL, Hastings, Rivard, Lafayette and Macomb Sts., DETROIT, MICH. State of Michigan, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Bids Feb. 18. CD 2/25, under LB.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Kan., Wichita—CONTROL TOWER—B.A. 3/25—Boeing Airplane Co., Plant No. 11, Personnel Bldg., Wichita, Kan. flight hangar control tower, Air Force Plant 13. Wilson & Co., 223 N. Santa Fe St., Salina, consult. engrs. Plans deposit $15.

Mo., St. Louis—PILE FOOTINGS, etc.—B.A. 3/26—Bd. Educ., H. V. Rhodes, comr. School Bldgs., 911 Locust St., Zone 1, pile footings, foundation, excavating and grading, new water service, etc. for proposed Technical High School, McRee and Hereford Aves. near Northrop Ave. F. Ray Leimkuehler, c/o owner, archt.

† **Kan., Topeka**—BUILDING—B.A. 3/27—Base Contg. Office, Topeka, renovation of Bldg. T-102, Forbes Air Force Base, IFB 14-6-3-53-26. CD 5/19/52.

† **N. M., Roswell**—SEWAGE TREATMENT PLANT—B.A. 3/27—U. S. Eng., Box 1538, Albuquerque, increasing capacity existing sewage treatment plant, Inv. No. Eng. 29-005-53-90. $75,000. Plans deposit $25. CD 2/19.

† **Okla., Oklahoma City**—JET ENGINE TEST BLDG.—B.A. 3/30—U. S. Govt., c/o Directorate of Procurement and Production, Tinker Air Force Base, Oklahoma City, four-cell high thrust jet engine test bldg., Bldg. T-24, Inv. Serial No. (IFB) 34-601-53-344. $500,000. Extended date. CD 2/10.

† **Neb., Lincoln**—TELEPHONE EXCHANGE—B.A. 3/31—U. S. Eng., 1709 Jackson St., Omaha, telephone exchange and communication bldg., Lincoln Air Force Base, Inv. 25-066-53-139. CD 7/17/52.

BIDS ASKED—BUILDINGS

† **N. M., Las Cruces**—LABORATORY—B.A. 3/25—U. S. Eng., Box 1538, Albuquerque, laboratory addn., exten. Inv. No. Eng 29-005-53-95. $400,000. Plans deposit $50. Extended date. CD 1/29.

▲ **Tex., Abilene**—HIGH SCHOOL—B.A. 4/3—Abilene Independent School Dist., Abilene, high school, $2,000,000. Plans deposit $75. David S. Castle Co., Box 124, engr.-archt. CD 8/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **U. S. Eng.**, 1709 Jackson St., Omaha, Neb., cancelled bids to have been opened Mar. 3, seeding, planting, Gavins Point Dam Proj. near Yankton, Inv. 25-066-53-184, SOUTH DAKOTA. CD 2/12.

Ritchie Bros., 1820 N. Mosley St., Wichita, Kan., CA, **$133,850**, street imprvs., WICHITA, KAN. City, City Hall, Wichita, Kan. Bids Feb. 3. CD 1/22/45.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City,

J. H. Barton, 1916 N. Broadway, Oklahoma City, Okla., CA. **$122,873**, est. $144,381, six concrete bridges, State Hy. 2, Muskogee Co. Bids Mar. 3, awarded Mar. 4.

City, City Hall, Abilene, Tex., Own Forces. **$100,000**, reconditioning and imprvs. some streets; **$90,000**, some asphalt street paving, ABILENE, TEX. CD 4/24.

City, Arlington, Tex., Own Forces. **$65,000**, some sanitary sewer collection lines, ARLINGTON, TEX. Joe J. Rady, 511 Insurance Bldg., Fort Worth, Tex. engr. Fred Casper, city engr. CD 2/26.

City, Arlington, Tex., Own Forces. **$42,000**, c.i. water distr. lines, ARLINGTON, TEX. Joe J. Rady, 511 Insurance Bldg., Fort Worth, Tex., engr. Fred Casper, city engr.

Dodds & Wedegartner, Inc., 382 N. Bowie St., San Benito, Tex., LB **$69,584**, some sewers, Part of Master Drainage System, BROWNSVILLE, TEX. City, Brownsville, Tex. Bids Feb. 26. CD 2/17.

Dofman's & Assoc., Brownsville, Tex., rejected bids Dec. 1, constr. and paving 400-auto capacity parking center, BROWNSVILLE, TEX. CD 11/21.

F. S. Oldt Co., 403 S. Haskell St., Dallas, Tex., CA. **$39,100**, est $45,000, water mains, Glendale Addn., Caruth Hills No. 3 and 24 in. line in Marsh Lane from Walnut Hill Lane to Royal Lane, DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Koch & Fowler, 3900 Lemmon St., Dallas, Tex., engrs. Bids Dec. 16, awarded Feb. 27.

Texas Bitulithic Co., 2121 Irving Blvd., Dallas, Tex. LB **$73,718**, White Rock Relief Bridge, Skillman Ave. extens., concrete culverts, DALLAS, TEX. Comrs. Dallas Co., Court House, Dallas, Tex. Koch & Fowler, 3900 Lemmon St., Dallas, Tex., engrs. Bids Feb. 26. CD 11/12.

Sutton & Stone Constr. Co., Gulf States Bldg., Houston, Tex., CA. **$41,200**, water lines, facilities, inside of tract, DUNCANVILLE, TEX. Sam Sutton & Assoc., Gulf States Bldg., Dallas, Tex.

Sutton & Stone Constr. Co., Gulf States Bldg., Houston, Tex., CA **$67,000**, sanitary sewers, **$67,275** storm sewers, open drainage, DUNCANVILLE, TEX. Sam Sutton & Assoc., Gulf States Bldg., Dallas, Tex. CD 2/26.

Briggs-Weaver, Box 5609, Dallas, Tex., LB **$69,700**, No. 6-A; **$25,564**, Part 6-B, pumping unit, FORT WORTH, TEX. City, City Hall, Fort Worth, Tex. Bids Feb. 26. CD 2/5.

Byron Jackson Co., 206 Reserve Loan Life Bldg., Dallas, Tex., LB **$36,299**, est. $60,000, water supply well and pumping unit, PARK CITIES, TEX. Dallas County Park Cities Water Control & Imprvt. Dist. 2, 8527 Harry Hines Blvd., Dallas, Tex. Bids Feb. 27. CD 2/4.

Midland Constr. Co., Texas City, Tex., LB **$85,297**, est. $60,000, storm drainage, Unit 2 of program, TEXAS

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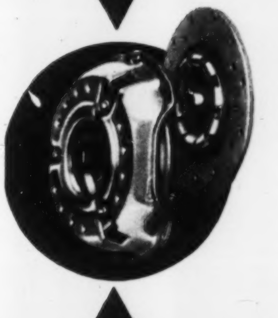

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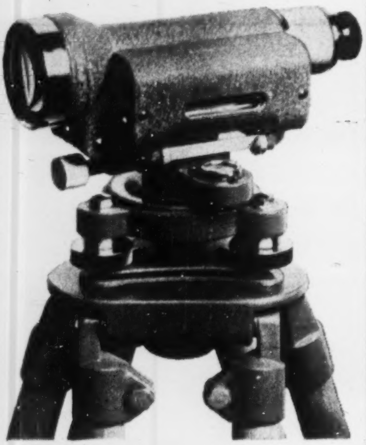

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CITY, TEX. Town, Texas City, Tex. Bids Feb. 25. CD 2/18.

† **U. S. Eng.,** Box 1229, Galveston, Tex. cancelled bids to have been opened Mar. 3, jet fuel storage, AVGAS storage with truck fill stand, Inv. No. Eng 41-243-53-106, Foster Air Force Base, VICTORIA, TEX. CD 1/30.

† **Pacific Oerlikon Co.,** 3001 N. Starr St., Tacoma, Wash., LB, **$642,000,** furnishing, installing, generators Little Porcupine Power Plant, Missouri River Basin Proj., Missouri-Souris Div., Spec. DC 3864, MONTANA, Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Feb. 26. CD 1/22.

† **Bureau Reclamation, Dpt. Interior,** Casper, Wyo., rejected bids Feb. 12, earthwork, lateral lining, structures, Lateral 256 extension and wasteway; earthwork, structures Laterals 256-55R and 265 74L, Kendrick Proj., Spec. 703C-294, WYOMING. CD 1/21.

† **McKinley-Rountree,** 2220 - 19th St., Lubbock, Tex., LB **$224,850,** central heating plant addn., Kirtland Air Force Base, Inv. 29-005-53-85, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 25.

† **Southwestern Electric Co.,** Andalusia, Ala., LB **$96,890,** const. GCA and airport surveillance radar facilities, Walker Air Force Base, Inv. No. Eng 29-005-53-83, ROSWELL, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 26. CD 1/22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Barnhart Bros. Constr. Co.,** 1130 W. 27 St., Independence, Mo., CA, **$1,000,000,** 82 RESIDENCES south end of Rock Wood Heights Subdivision, INDEPENDENCE, MO.

Schneiderhan Constr. Co., 450 S. Brentwood Blvd., Clayton, 5, Mo., CA, 76x130 ft., brick, steel, concrete CHURCH, Marshall and Sarah Aves., MAPLEWOOD (St. Louis 17 P.O.), MO. Concordia Lutheran Church, Maplewood, Mo. Bids Feb. 18. CD 2/6.

I. E. Millstone Constr. Co., 4343 Clayton Ave., St. Louis, 10, Mo., CA, 1 story, 130x185, 122 ft., 23,000 sq. ft., masonry, steel, concrete WAREHOUSE, OFFICE, 4101 Geraldine Ave., ST. LOUIS, MO. Rudolph Realty & Investment Co., 1602 Locust St., St. Louis, 3, Mo. R. C. Hafner & C. A. Prokes, 4343 Clayton Ave., St. Louis, 10, Mo., engrs.

T. H. Maenner Co., City Natl. Bank Bldg., Omaha, Neb. Owner Builds. **$450,000.** 50 low priced DWELLINGS, 65 and Blondo Sts., OMAHA, NEB.

▲ **Dillon Realty Co.,** 3420 Jones St., Omaha, Neb. Owner Builds. **$2,500,000.** 200 DWELLINGS, 52 and Ames Ave., OMAHA, NEB.

Dofman's & Assoc., Brownsville, Tex., rejected bids Dec. 1, 17-unit SHOPPING CENTER, BROWNSVILLE, TEX. CD 11/21.

W. J. Burke & Sons, 110 Goliad St., San Antonio, Tex. CA. **$327,500,** 40 DWELLINGS, SAN ANTONIO, TEX. Highland Hills, Inc., 110 Goliad St., San Antonio, Tex. CD 2/17.

Jaffe & Martin, 202 Winewood St., San Antonio, Tex. Owner Builds. **$309,250,** 35 DWELLINGS, SAN ANTONIO, TEX. CD 2/17.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Idaho, Twin Falls**—RANGE FACILITY—B.A. 3/26—Civil Aeronautics Admin., 1200 Exchange Bldg., Seattle, 4, Wash., VOR range facility at municipal airport, Inv. 1056.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Schurr & Finlay, Inc.,** Box 155 Yorba Linda, Calif., LB. **$80,850,** est. $91,170, electrical distr. sys. and services, Davis-Monthan Air Force Base, ENG-04-353-53-88, TUCSON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 20. CD 11/7/51.

▲ **WASHINGTON**—Washington Toll Bridge Auth., Olympia,

Manson Constr. & Engrg. Co., 821 Alaskan Way, Seattle, Wash., CA. **$1,051,476,** est. $1,000,000 bridge over

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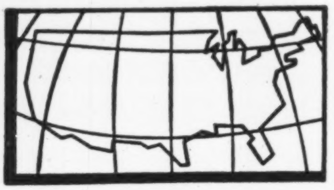

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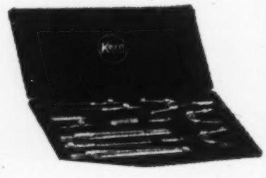

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Hales Passage to Fox Island Pierce Co. Bids Dec. 23. CD 12/30, under LB.

▲† **Bethlehem Pacific Coast Steel Co.,** 20 and Illinois Sts., San Francisco, Calif., LB. **$2,844,406.** tower steel for Chief Joseph-Snohomish 345-kv line, Inv. 6913, WASHINGTON. Bonneville Power Admin., 827 N.E. Oregon St., Portland, Ore. CD 2/5/51.

† **Puget Sound Bridge & Dredging Co.,** 2929 16 Ave. S.W., Seattle, Wash. LB. **$107,940,** est. $97,660, maintenance channel dredging in Swinomish Slough, Inv. 53-54, La Conner, WASHINGTON. U. S. Eng., 4735 Marginal Way, Seattle, 4, Wash. Bids Feb. 24. CD 2/11.

† **L. A. Hopkins Co., Inc.,** Box 1101, Yakima, Wash., LB. **$111,979,** est. $159,870, 3000 ft. 12 in. sanitary water supply line 3,939 ft. 24 in. raw water supply line and 4,300 ft. insulated steam supply line, Hanford Works, RICHLAND, WASH. Atomic Energy Comn., Richland, Wash. Bids Mar. 3. CD 2/11.

† **H. Halvorson, Inc.,** Ziegler Bldg., Spokane, Wash., LB. **$817,332,** 41x202 ft. operations bldg., with 3 story bsmnt., tower and 52x70 ft., rein.-con. central heating plant, Ault Field, Spec. 35605, WHIDBEY ISLAND, WASH. P. Wks. Officer, Thirteenth Naval District, 1611 W. Wheeler St., Seattle, Wash. Bids Mar. 3. CD 2/9.

† **Coast Pipeline Contractors,** 580 Bragato Rd., Belmont, Calif., LB. **$305,487,** Schedule 1;

Kevry Constr., Inc., 655 Peralta Ave., San Leandro, Calif., LB. **$71,375,** Schedule 2, earthwork, pipe lines, structures Contra Costa Canal Distribution System, Central Valley Proj. DC 3880, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Tracy, Calif. Bids Feb. 25. CD 1/26.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif., CA. **$1,055,875.** c. conc. on cement treated surf. subgrade plant mix on untreated rock surf. 7.9 mi. between Tulare Airport and Tagus, Tulare Co. Bids Feb. 18. CD 3/2, under LB.

† **E. A. Cornely,** 1277 Howard St., San Francisco, Calif., LB. **$70,322.** replacement of boilers, Bldg. 114, Veterans Administration Hospital, PALO ALTO, CALIF. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Feb. 10. CD 2/16.

▲ **Carl N. Swenson Co., Inc.,** 1095 Stockton Ave., San Jose, Calif., CA. **$1,246,000.** airport concourses Contract 138, SAN FRANCISCO, CALIF. Public Utilities Comn., City Hall, San Francisco, Calif. Bids Feb. 10, awarded Mar. 2. CD 2/20. under LB.

▲ **Shepherd & Green,** 309 American Trust Bldg., Stockton, Calif., LB. **$1,178,000.** Transit Shed No. 9, STOCKTON, CALIF. Port Comn. of Stockton Port Dist., 123 N. El Dorado St., Stockton, Calif. Bids Mar. 2. CD 2/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Newland Constr. Co., 1411 Racker Ave., Everett, Wash., LB. **$713,320,** general contract 1 story, 115,000 sq. ft. rein.-con., frame, Lynnwood Junior High SCHOOL, EDMONDS, WASH. School Dist. 15, Edmonds, Wash. Bids Mar. 2. CD 2/18.

E. E. Settergren, 3723 S.E. 21 St., Portland, Ore., CA. **$619,000,** Eliot SCHOOL, PORTLAND, ORE. School Dist. No. 1, 631 N. E. Clackamas St., Portland, Ore. Bids Feb. 11, awarded Feb. 26. CD 2/17, under LB.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Ontario Constr. Co. Ltd.,** Box 46, St. Catherines, Ont., CA, $1,000,000, two H barns for 200 horses and 40 stable hands, parking area, paddock, restaurant, barns expansion for 1953 meet, FORT ERIE, ONT. Ontario Jockey Club Ltd., 25 King St. W., Toronto, Ont. Awarded Feb. 26. CD 1/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Foster Wheeler Ltd.,** St. Catherines, Ont., CA, **$1,000,000,** OIL REFINERY, BONNYVILLE ALTA. Northern Leasholds Ltd., Bonnyville, Alta.

Hartib Constr. Co., 3244 Bloor St. W., Toronto, Ont., CA, **$825,009,** three 3 story, bsmnt., sub-bsmnt., 25x140 ft., steel, brick, concrete APARTMENT BLOCKS TORONTO, ONT. Northcliffe Investments c/o I. Boigan, archt., 1546 Avenue Rd, Toronto, Ont. Awarded Mar. 2.

G. Archambault Ltd., 726 Atwater Ave., Montreal, Que., Owner Builds, **$550,000,** five 3 story, bsmnt., 53x79 ft., brick, concrete APARTMENTS, MONTREAL, QUE.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **ALASKA**—Alaska Road Comn., Juneau,

S. Birch & Son and Lytle & Green, Central Bldg., Seattle 4, Wash., LB. **$2,196,719,** grading, surf., bit. surf. 49.84 mi. Alaska Hy. Sect. C1. Bids Mar. 3. CD 2/6.

† **U. S. Eng.,** Anchorage, Alaska, cancelled bids to have been opened Mar. 11, provide steam heat in lieu of existing hot air heat in 213 barracks, mess halls, etc., Elmendorf Air Force Base, ENG-95-507-53-73, ALASKA. Will re-advertise. CD 2/16.

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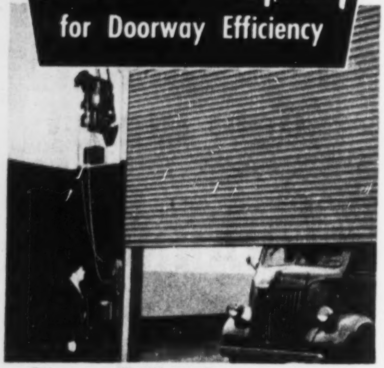

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Proposed Projects

WATER SUPPLY

▲ **S. C., Anderson**—Anderson Co. Water & Sewer Dist. 17, Anderson, WW and sanitary sewers. **$2,300,000.** John J. Harte Co., 284 Techwood Dr. N.W., Atlanta, Ga., consult. engr.

SEWERS, WASTE DISPOSAL

Calif., Petaluma—City, City Hall, **$575,000** bond election Mar. 31, sewerage sys., addns., imprvs. Harry N. Jenks, 63 Crescent Dr., Palo Alto, consult. engrs.

▲ **Fla., St. Petersburg**—City, City Hall, sewage treatment plant near Albert Whitted Airport. **$1,500,000.** Smith & Gillespie, P.O. Box 1048, Jacksonville, consult. engrs. CD 9/2/43.

Mich., Birmingham—City, P. Wks. Dpt., Birmingham, bond election Apr. 6, sewage plant, treatment disposal facilities. **$500,000.** Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs.

▲ **Mich., Kalamazoo**—City, P. Wks. Dpt., **$3,200,000** bond election Apr. 6, sewage disposal plant, treatment facilities, appurtenances, Jones, Henry & Schoonmaker, Security Bldg., Toledo, O., consult. engrs. CD 1/30.

▲ **Tenn., East Ridge**—Town, sanitary sewerage sys. **$2,400,000.**

Tex., Bryan—City, voted bonds Feb. 24, new sanitary sewer collection lines, **$500,000;** sanitary sewer disposal unit, **$150,000;** storm sewers, **$100,000;** sanitary sewerage sys. rehabilitation, **$75,000.** CD 2/9.

▲ **Ont., Sarnia**—City Council, E. Royden Colter, mgr., 3-phase, sewage disposal plant and 42-in. interceptor main along river front, **$3,100,000;** relief sewers Maxwell and Davis Sts., **$1,221,500;** extending storm and sanitary sewers into annexed areas, **$12,000,000.** James F. McLaren Assocs., 705 Yonge St., Toronto, Ont., consult. engrs. W. F. Greenwood, City Hall, Sarnia, engr. CD 6/25.

BRIDGES

▲ **CALIFORNIA**—Dpt. P. Wks., P. Wks. Bldg., Sacramento,
Contra Costa and Solano Counties—4-lane toll bridge paralleling existing bridge across Carquinez Straits. **$34,000,000.**

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City,
Pawnee Co.—bridge over Arkansas River at Blackburn. **$500,000.** G. H. Bittle, c/o owner, engr.

STREETS AND ROADS

O., Cleveland—City, City Hall, Zone 14, resurf. pavement of Euclid Ave. from Ontario St. to East Cleveland boundary line. **$420,000.** John C. Wenrick, City Hall, city comr. of engrg. CD 12/13/43.

OKLAHOMA—State Hy Dpt., Capitol, Oklahoma City,
Choctaw Co.—farm to market road from Hugo to Rattau, **$165,000.** G. H. Bittle, c/o owner, engr.

Tex., Pasadena—City, voted bonds Feb. 21, hard-type street paving, various sections of city, **$550,000;** some general reconstr., extens., wid'n. existing streets, **$200,000.** George S. Smith, city engr. CD 2/5.

▲ **Va., Norfolk**—City, City Hall, Tidewater Dr., approx. 1.3 mi. 6-lane connecting link bypassing downtown traffic, **$1,000,000.** S. C. Morrisette, c/o owner, Dir. of P. Wks.

▲ **WASHINGTON**—State Hy. Comn., Olympia,
Klickitat Co.—relocate and reconstr. Evergreen Highway, Maryhill to Roosevelt. **$1,000,000.** W. A. Bugge, state hy. engr. 3/19/53.

EARTHWORK, WATERWAYS

† **Kansas**—U. S. Eng., Davidson Bldg., Kansas City, Mo. stabilizing channel of Kaw River, Leavenworth and Lawrence, Leavenworth and Douglas Counties, **$130,000.** CD 5/29/44.

Md., Bladenburg—Prince George's Co., Marlboro, dredging Anacostia tributaries in vicinity of Bladensburg Peach Cross. **$300,000.**

Oklahoma—State Fish & Game Dpt., Capitol, Oklahoma City, dam and fish hatchery, on Gates Creek, near Hugo, Choctaw Co. **$100,000.** E. W. Dahlgren, c/o owner, engr.

Tex., Harlingen—Cameron Co. (Arroyo Colorado Navigation Dist., sponsors), Brownsville, voted bonds Feb. 24, construct portion Anzalduas Dam, **$265,000;** completion proposed imprvs. for navigation facilities, deepening channel, widening, dockage, **$200,000.** CD 1/22.

Tex., Pasadena—City, voted bonds Feb. 21, drainage, **$125,000.** George S. Smith, city engr. CD 2/5.

AIRPORTS

▲† **La., Houma—AIRPORT FACILITIES—Eighth Naval** Dist., 600 South St., New Orleans, plans by Curtis & Davis, 822 Perdido St., New Orleans, 21 buildings; runway extens., taxiways, electrical sys., railroad rehabilitation, engineering services, F. Shutts' Sons, Lake Charles, engr. **$2,500,000.**

▲† **Mo., Grandview**—HOSPITAL—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., hospital at Grandview Air Force Base, **$1,629,000.** CD 1/15/52.

▲ **Mont., Billings**—AIRPORT—City, City Hall $450,000 bond election Apr. 6, municipal airport runways addns., imprvs. other facilities. **$1,000,000.** Ed Waldo, City Hall, city engr.

▲† **Okla., Clinton**—AIR BASE—Dist. P. Wks. Office, 8th Naval Dist., Naval Station, New Orleans, La., plans by Wright & Selby, Hightower Bldg., Oklahoma City, rebuilding barracks and mess halls, **$1,100,000;** plans by Sorey, Hill & Sorey, 809 N. W. 36 St., Oklahoma City, admin. bldgs. and hangars, **$2,000,000;** plans by Vahlberg-Palmer-Vahlberg, 1323½ N. Robinson Air Base for the Air Force. Hudgins, Thompson, St., Oklahoma City, misc. bldgs. **$800,000,** at Clinton Ball & Assoc., 1100½ W. Main St., Oklahoma City, Zone 4, archts-engrs. for entire project.

▲† **S. D., Rapid City**—HOSPITAL—U. S. Eng., 1709 Jackson St., Omaha, Neb., hospital at Rapid City Air Force Base, **$2,193,000.** CD 11/12/51.

PUBLIC BUILDINGS

▲ **Calif., El Monte**—SCHOOLS—El Monte Union High School Dist., El Monte, voted **$5,250,000** bonds schools. CD 1/8.

▲ **Calif., Los Angeles**—SCHOOL—Los Angeles City School Dist., 1425 S. San Pedro St., plans by A. C. Zimmerman, 2439 Hyperion Ave., Westchester High School in Westchester District **$4,000,000.** CD 6/13.

▲ **Calif., Pomona**—SCHOOLS—Pomona City High School Dist., Pomona, voted **$1,400,000** bonds schools. CD 2/3.

Conn., Danbury—SCHOOL—City School Bldg. Comn., 20 West St., plans by Sherwood Mills & Smith, 65 Broad St., Stamford, elementary school, Lounsbury Property. **$691,600.** CD 2/9.

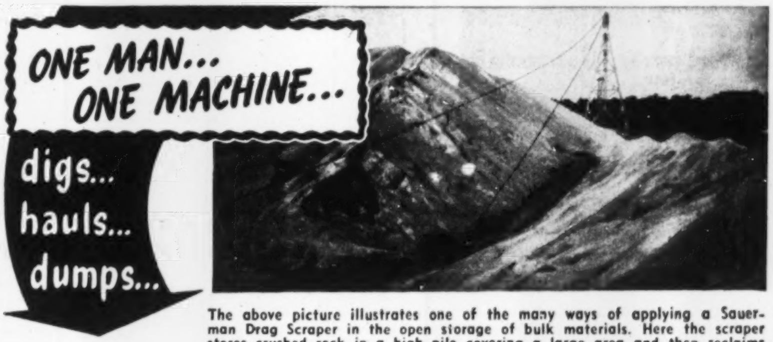
▲ **Conn., Fairfield**—HIGH SCHOOL—Town High School Comn., C. J. McClinch, Sr., Chn., Town Hall, high school, eastern end of town. **$1,000,000.**

Conn., Groton—HIGH SCHOOL—Town, R. S. Haggard, Distr. Selectman, Town Hall, plans by Warren H. Ashley, 299 Bishop Rd., West Hartford, Senior High School, **$850,000.**

Fla., Sanford—HOSPITAL—Seminole Co., plans by Elton J. Moughton, Sanford, and James Gamble Rogers II, Winter Park, hospital. **$900,000.** CD 11/17.

Ill., Crete-Monee—SCHOOL, etc.—Crete-Monee School District, plans by Naess & Murphy, 80 E. Jackson Blvd., Chicago, Zone 4, high school and gymnasium **$700,000.**

▲ **Ill., Highland**—SCHOOLS—Community Unit School District No. 5, Bd. Educ., Highland, plans by S. T. Papst & Assocs., Goldman Bldg., East St. Louis, 3 schools and existing school addns. **$1,190,000.** CD 2/12.



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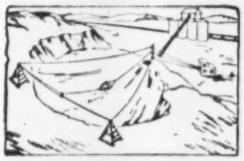
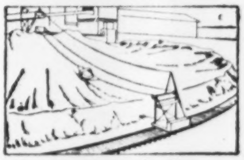
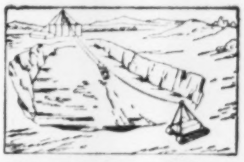


Sauerman Scraper Excavator Digs Gravel from Hill.



Sauerman Scraper Stockpiler Stores and Reclaims.



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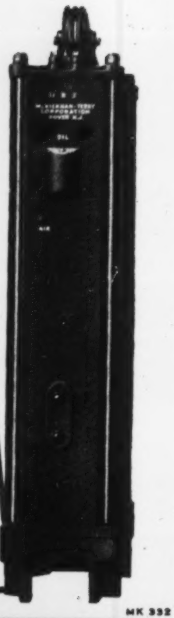

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Ky., Louisville—SCHOOLS—Jefferson Co., Bd. Educ., W. Jefferson St., plans by Fred Harstein and Louis & Henry, McDowell Bldg., Junior High School, Rockford Lane (Shively area) **$700,000**; elementary school for Prestonia-Adair Dist., **$500,000**, E. R. Ronald & Assoc., 554 S. Third St., consult. engrs. CD 11/10/52.

▲ **La., Bogalusa**—SCHOOLS—Washington Parish School Bd., Bogalusa, bond election Apr. 24, Bogalusa High School, **$965,985**; Central Memorial Negro High School, **$450,740**; Columbia Elementary School, **$345,432**; Poplar Negro Elementary School, **$307,280**.

Mass., Winthrop—SCHOOL—Town, Supt. Schools, 45 Pauline St., plans by Perry Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, High school. **$500,000**.

▲ **Mass., Weston**—SCHOOL—Town, School Dpt., Weston, plans by Hugh H. Stubbins, Jr., 103 Pleasant St., Lexington, 1 story, brick, steel, concrete H-shaped elementary school off School St. **$1,050,000**. R. G. Vanderweil, 9 Newbury St., Boston, mech. engr. Le Roy M. Hersum, 6 Beacon St., Boston, structural engr. CD 8/1.

▲ **Mass., Winthrop**—SCHOOL—Town, Supt. Schools, 45 Pauline St., plans by Perry, Shaw & Hepburn, Kehoe & Dean, 31 St. James St., Boston, high school. **$1,500,000**.

▲ **Mich., Ann Arbor**—SCHOOLS—City, Bd. Educ., voted bonds, Feb. 24, brick, steel, concrete high school, **$5,500,000**; 2 elementary school addns. or 2 school addns. and elemetnary school, **$1,450,000**; 2 story, bsmnt., brick, steel elementary school, **$700,000**. CD 2/13.

▲† **Minn., Fort Snelling** (P.O. Minneapolis)—HOSPITAL BLDGS.—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, remodeling bldgs. at Veterans Hospital. **$2,070,000**.

▲ **Mo., Kansas City**—SCHOOLS—Bd. Educ., H. W. Schooling, supt., Library Bldg., voted bonds Feb. 10, five schools, one school addn. **$1,250,000**. Edward N. Fuller, 701 E. 14 St., Zone 16, archt. Alfred Masterson, Lee Bldg., Zone 6, structrual engr. Howarth & Kinney, 101 W. 11 St., Zone 6, mech. engrs. CD 4/13/51.

▲ **Mo., Kirkwood (St. Louis 22, P. O.)**—SCHOOL—Bd. Educ., Kirkwood School District R-7, voted **$1,250,000** bonds, schools and school addns. CD 1/30.

Mo., Mehlville (St. Louis 23 P. O.)—SCHOOL—School Dist. R-9, St. Louis Bd. Educ., Emil H. C. Bernard, supt. Schools, 623 West Ripa Ave., Lemay, Zone 23, defeated **$840,000** bonds, school. Project postponed indefinitely. CD 2/20.

Mo., Nevada — SCHOOL — School Bd., Nevada, voted **$500,000** bonds Feb. 24, school imprvs. CD 2/13.

▲ **Mo., St. Louis**—HOSPITAL—St. Louis State Hospital, 5400 Arsenal St., clinical and admin. bldg., **$6,000,000**; nurses quarters, **$500,000**; industrial and occupational therapy bldg., **$500,000**; physicians quarters, **$250,000**.

▲ **N. J., Ancora**—HOSPITAL—N. J. Div. Purchase & Property, State House, Trenton, completing existing project to provide 3,000 beds, incl. housing units, tuberculosis bldg., administration bldg., smaller units, State Hospital, **$6,271,400**. CD 3/27.

N. J., Bordentown—CELL BLOCK—N. J. Div. Purchase & Property, State House, Trenton, addnl. cell block bldg., New Jersey Reformatory. **$600,000**. CD 10/26/50.

▲ **N. J., Greystone Park**—DORMITORY, etc.—N. J. Div. Purchase & Property, State House, Trenton, reconstr. dormitory bldg. and constr. new housing units, State Hospital, **$2,020,000**. CD 5/15/50.

▲ **N. J., Marlboro**—HOUSING UNIT, etc.—N. J. Div. Purchase & Property, State House Trenton, housing unit, occupational therapy bldg., patients' farm dormitory, State Hospital, **$1,524,000**. CD 1/23/46.

▲ **N. J., New Lisbon**—DORMITORY FACILITIES, etc.—N. J. Div. Purchase & Property, State House, Trenton, addnl. dormitory facilities, occupational therapy bldg., and auditorium State Colony for Feeble Minded Males, **$1,290,000**. CD 12/20/45.

▲ **N. J., Skillman**—HOSPITAL, etc.—N. J. Div. Purchase & Property, State House, Trenton, hospital addns., new clinical facilities, completion of housing program, State Village for Epileptics (to be known as New Jersey Neuropsychiatric Institute) **$1,341,400**. CD 5/15/50.

N. J., Totowa—DOMITORY FACILITIES—N. J. Div. Purchase & Property, State House, Trenton, dormitory facilities at State Training School. **$660,000**. CD 5/15/50.

▲ **N. J., Trenton**—HOUSING—Trenton Housing Aunth., 875 N. Willow St., plans by Micklewright & Mountford, 72 Ewing St., housing, Mellon St. **$1,500,000**.

N. J., Vineland—DORMITORY—N. J. Div. Purchase & Property State House, Trenton, addnl. dormitory bldgs. at Almond Road Colony of Training School for Mentally Deficient Children. **$1,333,200**. CD 3/13/47.

N. J., Woodbine—DORMITORY, etc.—N. J. Div. Purchase & Property, State House, Trenton, addn. dormitory buildings and expansion of sewerage facilities, State Colony for Feeble-Minded Males, **$990,000**. CD 1/2/52.

▲ **N. C., Goldsboro**—SCHOOL—Wayne Co. Bd. Educ., Court House, Negro Senior High School, **$600,000**; Junior White High School, **$450,000**. CD 5/1/46.

▲ **N. C., Raleigh**—SCHOOLS—Bd. Comrs. Wake Co., Jesse O. Sanderson, School Supt., Court House, voted bonds Feb. 24, city and county schools, new schools and imprvs. **$5,500,000**. CD 1/8.

▲ **O., Apple Creek**—HOSPITAL—State Dpt. Welfare, State Office Bldg., S. Front St., Columbus, plans by

Sims, Cornelius & Schooley, 2901 N. High St., Columbus, 300-inmate hospital for violently insane at Apple Creek State Hospital. **$1,450,000.** CD 12/17.

O., Cleveland—SECURITY—City, City Hall, Zone 14, plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Zone 14, addn. to serve as maximum security bldg., at Warrensville Workhouse to house 150-200 inmates, Warrensville, **$500,000.** CD 12/10/43.

▲ **O., Marion**—TRAINING SCHOOL—Dpt. P. Welfare, State Office Bldg., S. Front St., Columbus, plans by George S. Voinovich & Assoc., Swetland Bldg., Cleveland, buildings at Marion Training School. **$5,625,000.** CD 12/17.

▲ **Pa., Coraopolis**—HIGH SCHOOL—School Dist. of Moon Twp., R.D. 4, plans by Button & McLean, 119 E. Montgomery St., Pittsburgh, brick, block, steel Senior High School, Moon Twp. **$1,781,868.**

S. C., Barnwell—HOSPITAL—Barnwell Co., Barnwell, hospital. **$500,000.**

S. C., Bennettsville—HIGH SCHOOL—Marlboro Co. Bd. Educ., Bennettsville, plans by H. D. Harrall, Bennettsville, Senior High School, **$500,000.**

S. C., Pickens—HIGH SCHOOL—Pickens School Dist. A, Pickens, plans by Harold Woodward, Spartanburg, high school, **$500,000.** CD 11/23/45.

Tenn., Franklin — HOUSING — Franklin Housing Auth., Franklin, 100 housing units. **$850,000.**

▲ **Tex., Bryan**—GENERATING UNIT—City, voted bonds Feb. 24, electric power generating unit. **$1,000,000.** CD 2/9.

Tex., Dallas—WOMEN'S EXHIBIT, etc.—State Fair of Tex, Fair Park, plans by Gill & Harrell & Assoc., 1913 San Jacinto St., women's exhibit bldg. **$600,000;** plans by Fooshee & Cheek, 1901½ N. Harwood St., dormitory to house 200 herdsmen, **$300,000.** CD 2/27.

Tex., Houston—GARAGE—City, City Hall, 900 Brazos St., converting city auditorium into a 3 story auto parking garage. **$850,000.**

▲ **Tex., Sugarland**—PRISON UNIT—Texas Prison System, c/o Richard C. Jones, exec. asst., Huntsville, plans by George L. Dahl, 2101 N. St. Paul St., Dallas, prison unit, **$1,250,000.** CD 1/27.

▲ **Va., Chesterfield**—SCHOOLS—Chesterfield Co. School Bd., Chesterfield, **$3,000,000** bond election Apr. 7, constr. 4 elementary schools, alterations and addns. to 13 existing schools, CD 10/30.

Wash., Vancouver—DORMITORY—State Dpt. P. Institutions, Olympia, plans by Stewart & Richardson, Central Bldg., girls' dormitory, Washington State School for Deaf. **$800,000.** CD 9/24/51.

Wis., Oshkosh—SCHOOL—Bd. Educ., Oshkosh plans by Perkins & Will, 309 Jackson Blvd., Chicago, Zone 6,

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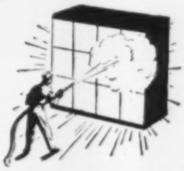

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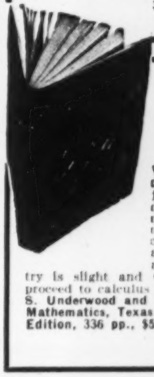

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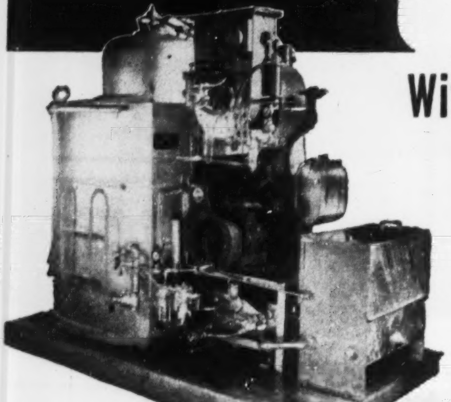

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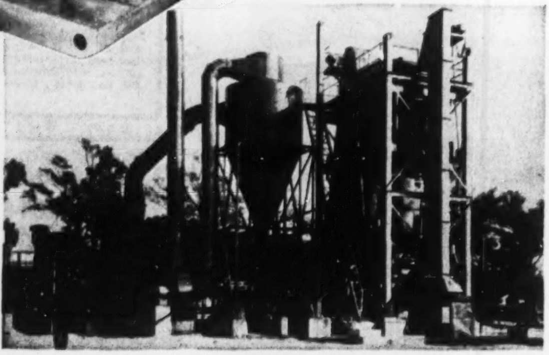

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Puerto Rico, San Juan—SUPREME COURT—Dpt. P. Wks., San Juan, 2 story Supreme Court Bldg., Munoz Pivera Park, near here, incl. access streets, sidewalks, parking spaces. **$700,000.**

▲ **Alta., Edmonton**—SCHOOL—Edmonton High School Bd., Edmonton, High school, 105 St. and 76 Ave. **$2,850,000.**

B. C., Vancouver—SCHOOL—Vancouver School Bd., plans by E. D. King, school bd. archt., John Oliver School addn. **$500,000.** CD 1/15/47.

▲ **Ont., London**—HOSPITAL—Ontario Dpt. Health, Queens Park, Toronto, 500-bed Ontario Hospital addn. **$3,000,000.**

Ont., Ottawa—SCHOOLS—Public School Bd., 330 Gilmour St., plant by Hazelgrove & Lithwick, 53 Queen St., school, St. Laurent Blvd., south of Montreal Rd., **$500,000;** plans by W. C. Sylvester, 46 Elgin St., Alta Vista School addn., **$300,000.**

COMMERCIAL BUILDINGS

▲ **Calif., San Bruno**—HOMES—American Lumber Mills, Burlingame, 2550 homes on site and Skyline Blvd. and Junipero Serra Blvd., incl. commercial developments. **$15,000,000.**

D. C., Wash.—PARISH HALL, etc.—Church of Annunciation, 39 St. and Mass. Ave. N.W., plans by Maurice S. May, 1223 Connecticut Ave. N.W., and Philip H. Frohman, 1741 DeSales St. N.W., parish hall, school and convent. **$650,000.**

Ind., Indianapolis—HOUSING—Citizens Housing Corp., 136 N. Delaware St., low-cost housing. **$750,000.**

▲ **Md., Bethesda**—OFFICE—Sterling & Scull, Inc., Newell Rd., Silver Spring, office to bridge Baltimore & Ohio right-of-way at Wisconsin Ave. **$3,000,000.**

▲ **Mich., Marysville**—RESIDENTIAL DEVELOPMENT—Marysville Development Co., Sixth St., residential development on 80 acres, Michigan and Minnesota Aves. **$1,000,000.**

▲ **Mo., Kansas City**—APARTMENT—J. E. Dunn Constr. Co., 929 Holmes St., plans by Swanson, Terney & Brey, 216 E. 10 St., 2nd phase, Dunlieth Towers, 10 story apartment, 46 and Jefferson Sts., **$1,250,000.**

N. Y., New York—OFFICE—Rockefeller Center, Inc., 50 Rockefeller Plaza, Zone 20, plans by Carson & Lundin, 50 Rockefeller Plaza, Zone 20, office bldg. alterations, 600 Fifth Ave. **$600,000.** CD 1/27/50.

O., Cleveland—OFFICE—Union Carbide & Carbon Corp., 30 E. 43 St., New York 17, N. Y., plans by Osborn Eng. Co., consult. engrs.-archts., 7016 Euclid Ave., 1 and 2 story sales office for five company divisions. **$500,000.**

▲ **O., Oxford**—HOSPITAL—McCullough Memorial Hospital, Bd. Trustees, Oxford, plans by Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, McCullough Memorial Hospital. **$1,500,000.** CD 9/22/48.

Pa., Jeannette—OFFICE—West Penn Power Co., 14 Wood St., Pittsburgh, plans by Hoffman & Crumpton, 700 Century Bldg., Pittsburgh, 1 and 2 story, brick, block, steel frame, office-warehouse-garage. **$500,000.**

▲ **Pa., Lansdale**—RESIDENCES—Lansdale Acres, c/o Jeffery & Ralph Robinson, 2601 Parkway, Phila., residential development. **$2,250,000.**

Pa., Phila.—CHURCH, etc.—Immaculate Heart of Mary Roman Catholic Church, Rev. Joseph M. Sullivan, pastor, 29 St. and Allegheny Ave., plans by Gleeson & Mulrooney, 1612 Market St., church, school, convent and rectory. **$500,000.**

S. C., Union—CHURCH—First Baptist Church, Union, plans by Heward Singley, 1845 Assembly St., Columbia, church, **$500,000.**

▲ **Tex., Dallas**—DORMITORIES, etc.—Southern Metho-Bd. Trustees, Beaumont, plans by Stone & Pitts, 1872 Calder Ave., 5 story west wing addn. to hospital. **$1,500,000.** CD 2/25.

▲ **Tex., Dallas**—DORMITORIES, etc.—Southern Methodist University, Perkins School of Theology, Mocking-

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bird Lane, plans by Mark Lemmon, 1210½ Main St., Dr. C. C. Selecman Dormitory, **$400,000;** Dr. Umphrey Lee Dormitory, **$400,000**, CD 1/28/46; gymnasium-utility bldg., **$1,500,000.** CD 12/11.

Tex., Houston—SHOPPING CENTER—Leo F. Corrigan, Mercantile Bank Bldg., Dallas, plans by Wyatt C. Hedrick, engr.-archt., 5201 Fannin St., shopping center addn., Humble Rd. **$500,000.** CD 3/18/48.

▲ **Tex., San Antonio**—OFFICE—Straus-Frank Co., 301 S. Flores St., plans by Atlee B. & Rob. M. Ayres, Transit Tower, 1 and 2 story, 220x560 ft. brick, stone, hollow tile walls, office warehouse, Coliseum Dr. between E. Houston and Commerce Sts. **$1,000,000.** W. E. Simpson Co., 945 Milam Bldg., consult. engr.

Va., Richmond—STORE—F. W. Woolworth Co., Woolworth Bldg., New York, N. Y., plans by Carneal & Johnston, Atlantic Life Bldg., department store. **$500,000.**

Wash., Des Moines—APARTMENT RESIDENCE HALL— Wesley Gardens, Des Moines, 6 story, 90-apartment residence hall, **$509,000.**

▲ **Wis., Milwaukee**—SHOPPING CENTER—Froedtert Enterprises, 810 N. Plankington St., Zone 3, plans by Grassold & Johnson & Assoc., 734 N. Jefferson St., Zone 2, Southgate Shopping Center addn. **$6,000,000.** CD 2/8.

▲ **Wis., Racine**—SHOPPING CENTER—Durand Co., Inc., 306 5 St., plans by Hans M. Geyer, 1419 Washington Ave., and J. Mandor Matson, 610 Main St., 20 to 25 unit shopping center. **$2,000,000.**

▲ **Alta., Calgary**—BANK and OFFICE—Bank of Toronto, King and Bay Sts., Toronto, Ont., 6 or 7 story bank and office bldg., 8 Ave. and 4 St. **$1,000,000.**

▲ **Ont., Toronto**—HOSPITAL—Lakeshore Hospital Assn., Dr. A. E. Noble, chn., Long Branch, plans by A. Martineau, 134 Clarence St., Kingston, 200-bed hospital, Evans Ave. **$3,000,000.** CD 9/23.

INDUSTRIAL BUILDINGS

▲ **Okla., Pryor—PLANT—Midwest Carbide Corp.,** Keokuk, Ia., calcium carbide plant. **$1,000,000. CD** 4/8.

▲ **Pa., Pittsburgh**—LABORATORY—U. S. Steel Corp., 71 Broadway, New York 4, N. Y., plans by Charles M. Stotz, Bessemer Bldg., Pittsburgh, research laboratory, center comprising main laboratory bldg., experimental engineering shop and industrial process development bldg., near here. **$2,500,000.** Edward Stotz, Jr., Bessemer Bldg., consult. engr.

▲ **S. C., Charleston**—PLANT—West Virginia Pulp & Paper Co., North Charleston, plant addn. **$3,000,000.**

▲ **S. C., Florence**—PLANT—Alma Trailer Co., Alma, Mich., mfg. plant. **$1,000,000.**

▲ **Tex., Fort Worth**—POWER UNIT—Texas Electric Service Co., 406 W. 7 St., Electric Bldg., 115-000 kw power unit, **$16,500,000.**

▲ **Tex., Orange**—CHEMICAL PLANT—Spencer Chemical Co., 1004 Baltimore St., Kansas City, Mo., chemical plant. **$1,000,000.**

▲ **Wis., Milwaukee**—POWER PLANT UNIT—Wisconsin Electric Power Co., 231 W. Michigan St., Zone 3, 3rd unit of power plant, Oak Creek. **$23,600,000,** incl. equip. CD 11/20/50.

▲ **Alta., Calgary**—PLANT—Hilton Bros. Ltd., 680 Wall St., Winnipeg, Man., corrugated box and paper plant. **$1,100,000.**

▲ **Alta., Edmonton**—LUBRICATING OIL PLANT—Imperial Oil Ltd., Church and King Sts., Toronto, Ont., lubricating oil plant, incl. solvent extraction plant, solvent dewaxing plant, equip. for finishing and packing lubricant; expanding existing refinery laboratory. **$10,000,000.**

▲ **B. C., Burnaby**—TRUCK TERMINAL, etc.—Brookwood Terminal Ltd., 520 S. 19th St., Harrisburg, Pa., U.S.A., and Ferguson Truck & Equipment Co., Ltd., 2015 Main St., Vancouver, truck terminal and combined truck and rail terminal on 44-acres. **$4,000,000.**

▲ **B. C., Burnaby**—WAREHOUSE—Canada Safeway Ltd., 840 Cambie St., Vancouver, grocery chain warehouse, 40-acre tract. **$15,000,000.** CD 12/7/50.

▲ **Ont., Sarnia**—CONTROL LABORATORY—Imperial Oil Ltd., Dr. J. L. Hugget, supt., Sarnia, control laboratory mechanized packaging plant and mechanical shops. **$6,000,000. CD 11/17/50.**

UNCLASSIFIED

Ala., Troy—NATURAL GAS SYSTEM—City, City Hall, natural gas system. **$900,000.**

▲ **Ill., Herscher**—GAS STORAGE PROJECT—**Peoples Gas** Light & Coke Co., 132 S. Michigan Ave., Chicago, Zone 3, natural underground gas storage project. **$17,000,000.**

▲ **O., Cleveland**—SWIMMING POOLS—City, City Hall, Zone 14, plans by Damon, Worley, Samuels & Assoc., Engineers Bldg., Zone 14, ten 42x75 ft., 3 to 5 ft. 100,000 gal. water capacity swimming pools, with surrounding concrete aprons, **$1,000,000.** Robert L. Svoboda, 714 Fox Bldg., Detroit, Mich., consult. archt. CD 11/7.

▲ **Oklahoma**—GAS PIPE LINE—Oklahoma Natural Gas Co., 401 N. Harvey St., Oklahoma City, 51 mi. natural gas pipe line from near Sapulpa to 4 mi. southeast of Pryor. **$1,500,000.** (Owner will buy the pipe from A. O. Smith Corp., 3533 N. 27 St., Milwaukee, Wis.). CD 9/3.

▲ **Texas**—PRODUCTS PIPE LINE—H. W. Bass & Sons, Inc., Magnolia Bldg., Dallas, 152 mi. 4-to 6-in. products pipe line from area Freer to Corpus Christi, **$1,600,000.**

▲ **Ont., Toronto**—RACE COURSE—Ontario Jockey Club, 2 King St. E., plans by Earle C. Morgan, 906 Yonge St., race course between Hy. No. 27 and Concession 4 south of Malton Rd. **$6,000,000.** CD 9/24.

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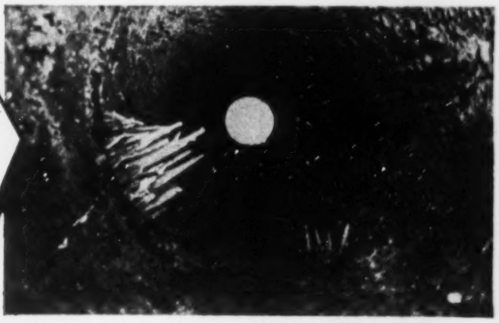

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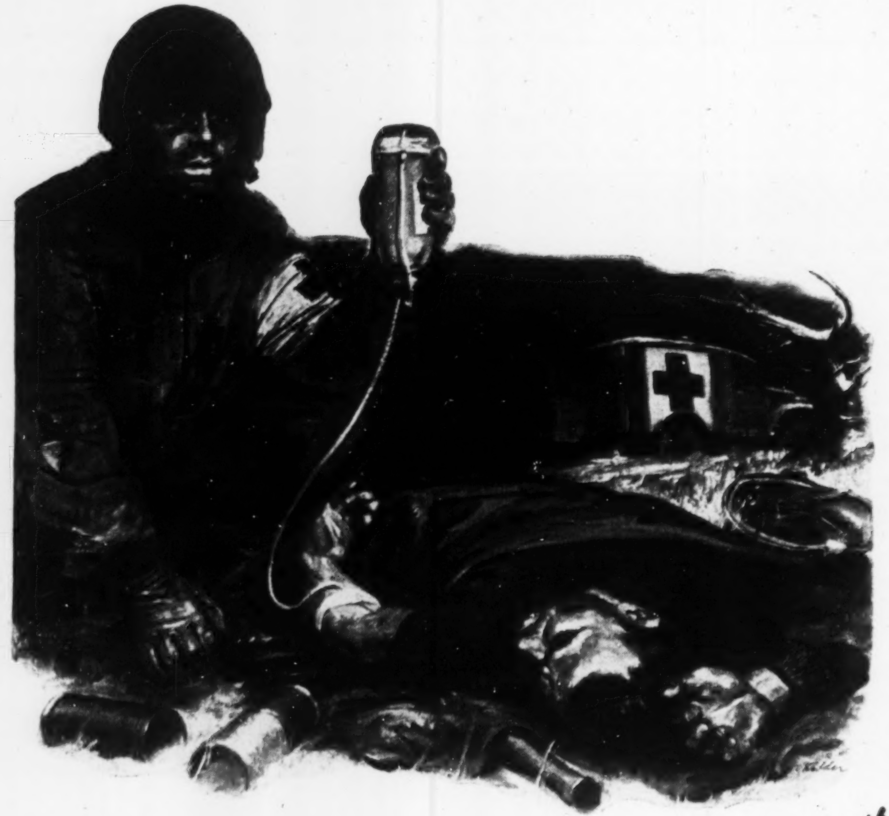

"I could see the corpsman kneeling over me. The blood plasma was running down through a tube into my arm and he said everything was going to be O.K. I was walking across an enemy mine field in Seoul when one exploded and a piece of shrapnel caught me in the leg.

" 'Got enough of that stuff?' I asked him, pointing to the blood. 'I guess we never have enough,' he said, 'but you can thank *somebody* for this pint.'

"How do you thank 'somebody' for blood? For saving your life? When I got back home, I discovered the answer at my local blood donor center. There's only *one* way to say thanks—by giving some of your own blood."

"How do you thank 'somebody' for Blood?"

Yes, all kinds of people give blood—for all kinds of reasons. But whatever *your* reason for giving blood, this you can be sure of: Whether your blood goes to a combat area, a local hospital, or for Civil Defense needs—this priceless, painless gift will some day save an American life!

Business Executives!

✓Check These Questions!

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

☐ Have you given your employees time off to make blood donations?

☐ Do you have a Blood Donor Honor Roll in your company?

☐ Have you set up a list of volunteers so that efficient plans can be made for scheduling donors?

☐ Have you arranged to have a Bloodmobile make regular visits?

☐ Has your management endorsed the local Blood Donor Program?

☐ Have you informed employees of your company's plan of co-operation?

☐ Was this information given through Plant Bulletin or House Magazine?

☐ Has your company given any recognition to donors?

☐ Have you conducted a Donor Pledge Campaign in your company?

Remember, as long as a *single* pint of blood may mean the difference between life and death for *any* American . . . the need for blood is *urgent!*

Give Blood Now—Call Your Red Cross Today!

National Blood Program

Bids—Low Bids—Contracts—Second Section

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 31 New Jersey

BIDS ASKED—BUILDINGS

▲† **Del., Newark**—PLANT, etc.—B.A. 3/23—Chrysler Corp., Delaware Tank Plant, Newark, Del., tank equipping plant and grading, $1,600,000. Extended date. Albert Kahn Associated Architects & Engineers, Inc., New Center Bldg., Detroit, Mich., archt. and engr. CD 2/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—N. J. Hy Auth., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,
Tully & DiNapoli, P.O. Box 145, Flushing, N.Y., CA **$4,059,316** structures grading, drainage, paving Sect. 4 of Garden State Parkway from Mill Rd. to Nye Ave., Contr. N. 15, Union and Essex Counties. Bids Feb. 19, awarded Mar. 5. CD 3/3, under LB.

▲ **NEW JERSEY**—N. J. Hy. Auth., State Hy. Dpt., Office Bldg., 1035 Parkway Ave., Trenton,
George M.Brewster & Son, 275 W. Ft. Lee Rd., Bogota, N. J. LB **$2,794,811**, stabilization, grading, paving, drainage, foundations for Sect. 7 of Garden State Parkway from Pinebrook Rd. to W. Front St., Contr 19, Monmouth Co. Bids Mar. 26. CD 2/11.

▲† **Auf Der Heide—Aragona**, 5510 Jackson St., West New York, N. J., LB, **$2,227,250**. air ship overhaul repair shop, Naval Air Station, NOY 76366, Spec. 37106, LAKEHURST, N. J. Dpt. Navy, Phila. Naval Base, Phila., Pa. Bids Dec. 15. CD 11/5.

▲† **James D. Morrissey, Inc.**, 9119 Frankford Ave., Phila., Pa., LB **$2,709,688**, airfield paving, utilities, at Naval Air Station, Runway 15-33, NOY 73199, Spec. 34378, WILLOW GROVE, PA. Dpt. Navy, Phila. Naval Base, Phila., Pa. Bids Feb. 26. CD 2/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Franconia Village Apartments**, c/o Martyn N. Weston, archt., 44 Court St., Brooklyn 2, N. Y. Owner Builds. **$2.000,000**. Three 6 story APARTMENTS, Kessena Blvd. and 45 Ave., FLUSHING, N. Y.

▲ **Gens-Jarboe, Inc.**, 101 Park Ave., New York 17, N. Y. CA **$1,800,000**. DORMITORY to be called F. W. Olim Hall, 69 St. and York Ave., NEW YORK, N. Y. Cornell University Medical College, 445 E. 69 St., New York 21, N. Y. CD 5/7.

▲ **Caye Constr. Co. Inc.**, 356 Fulton St., Brooklyn 1, N. Y. LB **$4,644,800**, general constr.;
H. Sand & Co., Inc., 291 Broadway. New York 7, N. Y., LB **$623,100**, heating and ventilating;
Lipsky & Rosenthal, Inc., Lexington Ave. and 115 St., New York 29, N. Y., LB **$536,136**, plumbing for Hammell HOUSES, Proj. No. NY 5-27 in area bounded generally by Freeway, Hammell Blvd., Beach 81 St., Rockaway Beach Blvd., and Beach 86 St., Queens Bo o, ROCKAWAY, N. Y. New York City Housing Auth., 63 Park Row, New York 28, N. Y. Bids Mar. 3. CD 2/12.

▲ **John McShain**, 1750 N. Olden Ave., Trenton, N. J., CA, **$3,600,000**, SHOPPING CENTER, RESTAURANT, PROFESSIONAL bldg., parking area, PRINCETON, N. J. Clearview Assoc., 145 Harrison St., Princeton, N. J. Bids Dec. 15. CD 12/11.

▲ **Millside Homes, Inc.**, Roebling, N. J., Separate Contracts, **$1,350,000**, RESIDENTIAL DEVELOPMENT, Chester Ave. and Greenwood St., RIVERSIDE, N. J.

▲ **Westover Corp.**, c/o Herbert C. Anderson, archt., 400 DeKalb St., Norristown, Pa. Separate Contracts. **$6,000,000** RESIDENTIAL DEVELOPMENT, Schuylkill and Juanita Rd., JEFFERSONVILLE, PA.

▲ **John McShain**, 17 and Spring Garden Sts., Phila., Pa. CA. **$1,892,200**, general contract Morris E. Leeds Junior HIGH SCHOOL; CA. **$992,200**, William Dick Elementary SCHOOL and paving, PHILA. PA. Bd. Educ., 21 and Winter Sts., Phila., Pa. Bids Feb. 11. CD 2/19, under LB.

▲ **J. J. Cannon**, 305 S. Chester Park, Glenolden, Pa., Separate Contracts. **$3,510,000**. RESIDENTIAL DEVELOPMENT, Michell St., RIDLEY PARK, PA.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 24 Georgia

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Southeastern Contg. Co. & C. E. Adams & Co.**, 3700 10 Ave. N., Birmingham, Ala., CA. **$1,749,271**, natural gas sys., ALBERTVILLE, ALA. Marshall Co. Gas District, Court House, Albertville, Ala. Bids Feb. 18. CD 2/26, under LB.

▲ **Keller Constr. Co.**, 7900 Palm St., New Orleans, La. CA **$2,342,500**. constr., comoletion of enlargement water treatment plant, Shrewsbury, NEW ORLEANS, LA. East Jefferson Waterworks Dist. No. 1, 3600 Jefferson Hy., New Orleans, La. CD 1/30, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Gust K. Newberg Constr. Co.**, 2040 N. Ashland St. Chicago, Ill., LB **$2,017,000**, construct TB-NP BUILDING 90, AUGUSTA, GA. Veterans Administration, Munitions Bldg., Wash., D. C. Bids Mar. 10. CD 1/21.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York, N. Y. CA. **$20,000,000**. Design and construct chemical PLANT, MEMPHIS, TENN. W. R. Grace & Co., 7 Hanover Square, New York, N. Y. CD 8/20.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 10, 14 Ohio

BIDS ASKED—BUILDINGS

▲ **Mich., Saginaw**—HOUSING—B.A. 7/1—Saginaw Housing Comn., Admin. Office, Harold St., 236 low-income housing units, Fuller and Norman Sts. $3,-000,000. Leinweber, Yamasaki & Hellmuth, 112 Madison Ave., Detroit, Zone 26, archts. **(Correction—architects.)** CD 1/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Anderson Bros. Corp.**, P.O. Box 2591, Houston, Tex. CA. Est. **$3,000,000**. 195 mi. natural gas line from Ironwood, to Cook, MICHIGAN. Lake Head Pipe Line Co., c/o contractor.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Duffy Constr. Co.**, Terminal Tower, Cleveland, O. CA. **$7,500,000**. 96,000 sq. ft. PARCEL POST annex and GARAGE, 300-truck GARAGE and railroad loading facilities W. 9th St. an lakefront for lease to United States Post Office, Cleveland, O., CLEVELAND, O. New York Central System, W. 3 St. and St. Clair Ave., Cleveland, O. Awarded Feb. 27. CD 7/31.

▲† **Butler Mfg. Co.**, 7400 E. 13 St., Kansas City, Mo, CA. **$796,790**, prefabricated steel bldgs.;
Continental Electric Co., Inc., 7374 Reading St., Cincinnati, O., CA. **$104,870** each ($209,740 total) wiring and equip.;
I. T. E. Circuit Breaker Co., 19 and Hamilton Sts., Phila., Pa., CA **$73,280**, electrical work;
Kolinski Concrete Co., 344 E. Stewart St., Milwaukee, Wis., CA. **$4,405,650**, mixing and delivering ready-mixed concrete;
Taylor-Wheless Co., Hy. 80 W., Jackson, Miss., CA **$3,990,700**, general site grading, drainage, at Gaseous Diffusion PLANT (Subcontractors under Peter Kiewit Sons' Co., P.O. Box 268, Portsmouth, O.) for Atomic Energy Comn., 1901 Constitution Ave. N. W. Wash. 25, D. C., PIKETON and WAKEFIELD, O. CD 8/13, under CA.

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland, O. CA est. **$10,000,000**. limestone PLANT, incl. crushing, screening, reclaiming facilities, stockpiling, loading sys., conveyor sys., pumping facilities, etc. all on Lake Huron, near ALPENA, MICH. Presque Isle Corp., c/o Jones & Lauglin Steel Corp., 3289 Beaufait St., Detroit, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
March 27 Minnesota
STREETS AND ROADS
March 27 Minnesota

BIDS ASKED—BUILDINGS

▲ **Tex., San Antonio**—HOSPITAL—B.A. 4/15—Santa Rosa Hospital, Houston and Santa Rosa Sts., 5 story, 120-room hospital addn., 2 elec. elevators. $2,000,-000. Phelps & DeWees & Simmons, 1501-6 Majestic Bldg., archts. Frank T. Drought, 117 W. Pecan St., and Gerard M. Baker, 1501 Majestic Bldg., engrs. CD 1/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Tieso & Kostka**, 1650 Carroll Ave., St. Paul, Minn. CA approx. **$2,000,000**. 125 HOMES 1 mi. south of MOUNTAIN IRON, MINN. Oliver Iron Mining Co., Wolvin Bldg., Duluth, Minn.

▲ **Oliver Iron Mining Co.**, Div. U. S. Steel Co., Wolvin Bldg., Duluth, Minn. Owner Builds. **$60,000,000**. iron benficiation PLANT, near TWO HARBORS, MINN.

▲ **Fausett Realty Co.**, 215 Louisiana St., Little Rock, Ark. Owner Builds. **$6,000,000**. 600 RESIDENCES, LITTLE ROCK, ARK.

▲ **Bralei Homes, Inc.**, 5 and Vine Sts., Little Rock, Ark. Owner Builds. **$3,200,000**. 400 RESIDENCES, LITTLE ROCK, ARK.

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BUILDINGS

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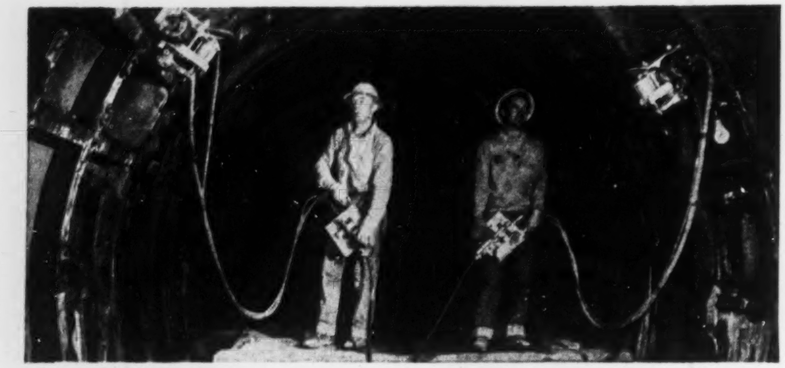
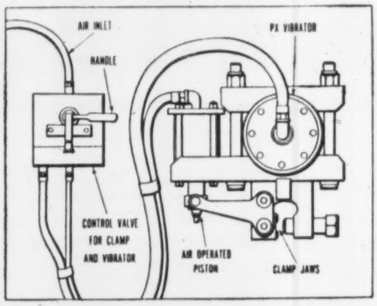


VIBER EXTERNAL VIBRATORS with quick-acting mounting clamps prove very effective in producing unusually smooth concrete tunnel linings.

Form Vibration Speeds Tunnel Lining, Gives Better Concrete, Smoother Finish

Tunnel lining contractors now use VIBER external vibration on movable steel forms to speed production of denser, more uniform concrete and a finished surface almost as perfect as the form itself. This gives maximum capacity with minimum frictional losses in diversion tunnels, storm drains, or other water-carrying structures. Generally one vibrator is clamped on each side of the steel form (which transmits the vibration) at a height convenient for clamping and moving as work progresses. One USBR project engineer reported transmission of vibration "throughout length of the slope—20 to 25 feet." Vibrators clamped near upper end of the advancing slope may be turned on briefly to help settling while concrete is deposited, after which a vibrating time of ten to forty seconds, depending on conditions, will consolidate it and produce the surface required.



AIR-OPERATED MOUNTING CLAMP and operating valve provide a quick and convenient means of clamping the external vibrator on the form wherever a plate or angle is accessible. Valve (left) turns the vibrator on and off, and operates the air piston to provide a clamping force of 1800 pounds on the adjustable jaws.

UNLOADING BULK CEMENT is one of many other successful applications of external vibration. One large oil well cementing company uses vibration to unload bulk cement in over fifty plants, some handling as much as 500,000 sacks per month. If you handle or package bulk materials, you can probably use external vibration to good advantage.

EXTERNAL VIBRATION is another field in which VIBER has pioneered in its continuing search for new knowledge and techniques in the useful application of vibration. For further information on VIBER'S complete line of internal and external vibrators, write your nearest authorized distributor or **VIBER COMPANY, 726 South Flower St., Burbank, California.** Dept. 53

▲ **Wallin, Dickey & Rich Lumber Co.,** West Memphis, Ark. Owner Builds. **$3,000,000.** 312 RESIDENCES, WEST MEMPHIS, ARK.

▲ **Ebasco Services, Inc.,** 2 Rector St., New York 6, N. Y. CA. **$7,000,000,** design and construct 25,000 kw. steam GENERATING unit, MANDAN, N. D. Montana-Dakota Utilities Co., 831 Second Ave. S., Minneapolis, Minn.

▲ **Ebasco Services, Inc.,** 2 Rector St., New York 6, N. Y. CA. Approx. **$2,000,000.** design and construct 8000 kw. gas turbine GENERATING PLANT, WILLISTON, N. D. Montana-Dakota Utilities Co., 831 Second Ave. S., Minneapolis, Minn.

▲ **Southwest Constr. Corp.,** 5100 E. 17 St., Oklahoma City, Okla., LB **$1,580,000,** Thomas A. Edison Junior HIGH SCHOOL, TULSA, OKLA. Bd. Educ., Independent School Dist. 1 of Tulsa Co., 410 S. Cincinnati St., Tulsa, Okla. Black & West, Tri-State Insurance Bldg., Tulsa, Okla., archts. Bids Mar. 2.

▲ **Hudson Eng. Corp.,** 2711 Danville St., Houston, Tex. CA **$2,750,000.** REFINERY, near BOWIE, TEX. Bowie Gasoline Co., Bowie, Tex. CD 3/4.

▲ **O'Rourke Constr. Co.,** Box 5384, Dallas, Tex., CA **$1,500,000.** BANK and OFFICE addns., alterations, DALLAS, TEX. First National Bank, 1401 Main St., Dallas, Tex. George L. Dahl, 2101 N. St. Paul St., Dallas, Tex., archt. CD 5/15/51.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 1 California
STREETS AND ROADS
April 1 California

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **W. W. Clyde & Co.** and **Jacobsen Contr. Co.,** 421 W. 13th South St., Salt Lake City, Utah, CA **$1,647,240,** constr 100 AMMUNITION MAGAZINES (Igloo Type) and bit. surf. Blocks 612 and 614, Tooele Ordnance Depot, TOOELE, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Aug. 28. CD 9/15, under LB.

▲ **Carson Park Builders,** Box 86, Long Beach, Calif., CA, **$1,584,100,** 198 frame, stucco DWELLINGS, Carsite, Keynette and Shipway Sts., CARSON PARK, CALIF. Carson Park Mutual Homes No. 11, Box 8-6, Long Beach, Calif. Paul J. Duncan, Sherman Oaks, Calif., archt.

CANADA

SOON LETS CONTRACT—BUILDINGS

▲ **N. S., New Glasgow**—HOSPITAL—Aberdeen Hospital Comn., G. R. Saunders, secy., New Glasgow, soon lets contract 5 story, 44x256 ft., T-shaped, 44x100 ft. rear wing hospital, separate 3 story power house and laundry 67x90 ft., underground passage connecting, all rein.-con., frame, brick, stone, $1,800,000. McDougall & Friedman, 1235 McGill College Ave., Montreal, engrs. E. J. Turcotte 1478 St. Catherines St. W., Montreal, Que., archt. CD 3/31/44.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Poole Constr. Co., Ltd.,** 2402 2A St. S.E. Calgary, Alta. CA. Est. **$5,500,000.** dam at Bearspaw for halting winter flooding of Bow River, CALGARY, ALTA. Calgary Power Co., Insurance Exchange Bldg., Calgary, Alta. CD 1/17/52.

▲ **Standard Dredging Co. Ltd.,** East St. John, St. John, N. B. LB. **$1,893,005,** piers 2 and 2 extensions, St. John Harbor, ST. JOHN, N. B. National Harbors Bd., Parliament Bldgs., Ottawa, Ont. Bids Feb. 27. CD 2/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Chemical Constr. Inter-American Ltd.,** Bank of Nova Scotia Bldg., Toronto, Ont., CA. **$4,000,000.** sulphur PLANT, NIAGARA FALLS, ONT. Noranda Mines Ltd., Bank of Nova Scotia Bldg., Toronto, Ont. Chemical Constr. Inter-American Ltd., Bank of Nova Scotia Bldg., Toronto, Ont., engr. CD 5/8.

▲ **J. S. McLennan,** 71 Bayview Rd., Toronto, Ont., Owner Builds, **$3,000,000,** defence workers low-priced HOUSING units, TORONTO, ONT.

▲ **Refinery Engineering Ltd.,** 2 Toronto St., Toronto, Ont. CA. Est. **$5,000,000.** expansion and modernization of REFINERY, REGINA, SASK. Consumer's Co-operative Refineries Ltd., No. 1 Hy., Regina, Sask. CD 7/13/45.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Alaska, Ketchikan**—B.A. 4/14—City, City Hall, 2 tunnels 4,500 ft. long, rockfill concrete-lined dam, 30x77 ft. power house, addn. etc., at Beaver Falls. $1,616,190 Plans deposit $50. W. D. Shannon & Assoc., Stuart Bldg., Seattle 1, Wash., engrs. CD 1/16/52.

(Proposal Advertisements see pp. 104 to 107)

UNIT PRICES

ALUMINUM-TRIMMED, ONE-STORY WAREHOUSE, Silver Spring, Md., built in record time using the Macomber V-Lok method of assembly.

Low cost warehouse, Maryland

By reducing the man-hours of on-site labor, William Richardson, Silver Spring, Md. was able to construct a one-story warehouse for Sterling & Scull, Silver Spring, at a low cost of less than $4.50 per square foot. This low cost is credited to the use of the Macomber V-Lok method for connecting roof frame members and columns (ENR 9-5-51). The method eliminates the use of bolts and rivets, substituting a simple locking device between the parts. The structural steel accounts for 26% of total cost.

A large amount of the labor saving was accounted for by the 59-ton frame, with columns spaced for 20-ft bays, which was constructed in 398 man-hours. Placing the Macomber 20-gage high-rib-section metal decking on the roof framing was also accomplished in the short time of 252 man-hours, including tack-welding of framing members of columns. Financing changes for the owner were held down by the short, four-months, total construction period.

Before it was completed, the warehouse was rented to the U. S. Geological Survey to be used as a map-distribution center, thus office space, reception areas, and other decorating were required. Without these added features, such as acoustical ceilings, asphalt floor, plastering, metal partitions, blinds, and part of the electrical plumbing and heating system, the warehouse could have been constructed for less than $4.00 per square foot. In addition, part of the construction costs, amounting to about 10¢ per square foot, went into a concrete retaining wall to hold up an earth bank at one endge of the property. Macomber added outside aluminum trim without any charge above the base bid for their own steel products put in place.

The following is a breakdown of the warehouse costs by dollars and by the percentage of the total cost accounted for by each item.

Contr. **William Richardson, Silver Spring, Md.** **$179,234**

Item	Cost	% of Total Cost
Air compressor service	$924.53	0.516
Hardware	136.91	0.076
Lumber & building supplies	6,557.46	3.659
Concrete	11,814.86	6.592
Telephone service	62.75	0.035
Fuel for motors	17.56	0.010
Reinforcing steel	3,272.23	1.826
Form oil	34.53	0.019
Steel windows & doors	5,193.24	2.897
Brickwork	9,920.00	5.535
Steel lintels & rails	614.69	0.343
Tie wire	26.17	0.015
Nails	166.31	0.093
Conc finishing & common labor	7,090.02	3.956
Gravel	3,176.51	1.772
Electric work & fixtures	18,411.00	10.272
Structural steel (Macomber)	46,767.98	26.093
Bulldozer work	137.00	0.076
Plumbing & heating	18,637.22	10,398
Roofing	9,475.00	5.286
Fence	920.00	0.513
Concrete hardener	581.20	0.324
Tile work	1,067.00	0.595
Electric service	30.45	0.017
Paint	154.81	0.086
Insulation	3,053.00	1.703
Grading	906.19	0.506
Waterproofing	50.00	0.028
Glazing	1,758.47	0.981
Plastering	4,200.00	2.343
Sheet metal work	156.51	0.087
Accoustical ceiling & asphalt floor	9,263.00	5.168
Overhead doors	865.00	0.483
Window cleaning	200.00	0.112
Metal partitions	386.00	0.215
Blinds	402.90	0.225
Water coolers	692.42	0.386
Curbs	436.25	0.243
Burlap	79.80	0.045
Truck charge	50.00	0.028
Sod	295.04	0.165
Roof vents	175.00	0.098
Payroll	10,226.69	5.706
Payroll charges (social security, Md. unempl insur., excise tax)	848.52	0.473

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A section of 48" Cast Iron Pipe made by WARREN in 1866 was recently excavated in Woodlawn Cemetary, N. Y. Part of a 2500 foot supply line from the Kensico Reservoir, abandoned in 1943 due to major changes in New York City water distribution system. Cemetary Management decided to salvage this old pipe which was found to be in exceilent condition after these years of service under pressures from 60 to 80 pounds psi. It's typical of "WARREN-CAST" Pipe!

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"A CENTURY OF PROGRESS AND QUALITY CASTINGS"

BUSINESS AND FINANCE

Decline in housing starts seen

Ben Hazen warns builders to watch vacancy ratios; other leaders see saturation point nearly reached

The home-building industry has received several warnings lately not to take it for granted that housing starts will maintain their present million-a-year clip indefinitely.

For instance, Ben H. Hazen, president of the U. S. Savings & Loan League, recently warned speculative builders to keep close watch on the vacancy ratio of housing units in their local areas, to avoid getting overextended on new developments.

Hazen doesn't agree with those housing experts who believe that slum-clearance projects and replacement of obsolete houses are going to keep housing starts running at 1,000,000 units a year indefinitely. He predicts that starts will decline somewhere between 15% and 25%, because of the expected reduction in the formation of new families during the 1950's (ENR Feb. 12, p. 17).

• Real-estate analyst—Roy Wenzlick has predicted that new houses are going to be harder to sell this year. He believes that in most communities, a real housing shortage no longer exists.

• Saturation?—And in New York City early this month, Joseph R. Jones, a vice-president of the big Security-First National Bank of Los Angeles, told a conference of bankers that "possibly we are approaching the point of a saturation of the market."

Jones cited census figures to show that in 1950 the average housing unit served 3.26 people. In 1940, a year when in his opinion supply and demand for housing were in balance, the average unit served 3.53 people.

The current high volume of housing construction, Jones argues, "is predicted largely on the very liberal credit now available." He believes that "the average buyer of a tract house today is buying on a much thinner margin of equity and without the financial responsibility we have thought necessary the past."

To get an idea of how new house sales are going so far this year, ENR asked builders in some key cities about the market for new houses. The survey shows a spotty picture. In some areas, demand is about the same as last year. But in others it is easier; and in one city it is down fairly sharply.

Here are the results of the survey, working from West to East:

• Los Angeles—The home-building market is getting more competitive than it has been, but demand for new houses is still strong. Most builders have plans for 1953 at least as big as 1952, and many have bigger plans.

These plans are at least partly in anticipation of: (1) a boost in interest rates on GI and FHA mortgages, making banks more interested in these loans, and (2) lengthening of amortization periods, which would have the effect of reducing monthly carrying charges.

Sales have been lower lately, though. One observer estimates that some individual builders are now selling about half the number of houses they did last year. But completed houses still aren't staying unsold in any quantity. The difference is that tracts used to sell out before construction began. Now they don't. Prices have not been lowered, but there's more competition on quality, and more emphasis on selling.

• Milwaukee—Most home builders here expect to put up more houses or apartment units than in 1952. Some feel that even if higher wage rates boost their costs, stiffer competition will force them to absorb it. A couple of builders think that home buyers are getting more for their money now than at this time last year.

• Chicago—The building season here is going strong. During the first two months of 1953, the city issued 1,228 residential and multiple-dwelling construction permits, compared with 795 in the same period last year. This may be due partly, some think, to the good construction weather.

Builders and mortagage bankers see little chance of a decline in demand for housing in this area. Some believe the number of starts may be 5% to 10% above 1952. They say that veterans can still get GI mortgages here, though they may have to shop around.

• Cleveland—Here home construction is expected to be down about 10% from last year. Total sales of new houses are expected to be down about 25%. Reason: a carryover of unsold houses from last year of somewhere from 1,100 to 2,000 units—with most of the houses priced under $20,000. Builders there expect prices will be no lower than last year. Prices of houses may rise as much as 5% because of expected increases in wage rates.

Builders here find it no trouble to arrange mortgage financing on regular FHA homes. But they do have a hard time finding GI mortgage money.

U.S. Business: the big picture

While total contract awards reported by Engineering News-Record in January and February were setting an all-time high (ENR Mar.5'53,p97), U. S. industry in general has also been rolling along at a very fast pace.

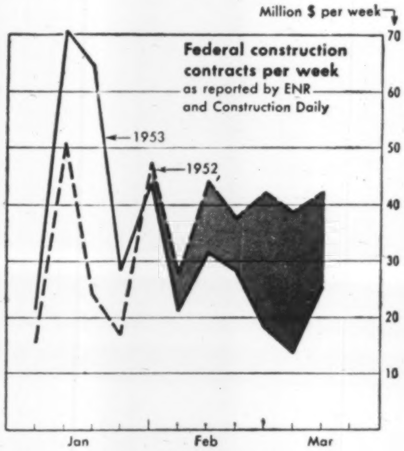
Take a look at these indicators:

- **The Federal Reserve Board's index of industrial production hit a postwar high in February.**
- **According to government figures, more people were working in January than in any previous January in history.**
- **The nation's steel mills turned out about 18.8 million tons of steel in January and February, a record tonnage for that period.**
- **Retail sales were more than $14 billion in January, up about $1 billion from January, 1952.**
- **Bank loans to business now total around $22.7 billion, up about $1.5 billion above this time last year.**

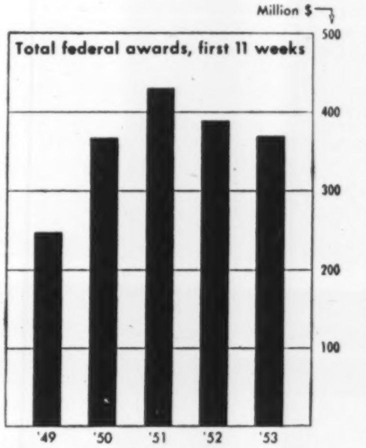
There are other signs making for business optimism. The auto industry plans to turn out 600,000 cars this month. And the National Machine Tool Builders Assn. reports that orders for machine tools are increasing.

The picture isn't all rosy. Some economists are worried about the fact that during the last quarter of 1952 business inventories increased about $500 million. That's contrary to the usual trend. They wonder whether this means we aren't producing more than we can use currently. However, last week the Department of Commerce reported that inventories had declined about $100 million during January.

At any rate, nearly all business observers agree that the current high level of production means that 1953 is going to be a very competitive year.



WEEKLY FEDERAL AWARDS fall sharply below '52 weeks in February and March '53



FEDERAL AWARDS for first 11 weeks of '53 are 5% behind '52 period

ENR Business News

Federal awards volume off sharply as result of administration economy plan

The Eisenhower-Dodge economy order, issued last month (ENR Feb. 12, p. 21) has cut sharply into federal construction contract awards. February contracts for federal work totaled only $99 million, 35% less than in the same month of 1952. And volume dropped still more sharply in the first two weeks of March. Federal awards lagged 51% behind the similar 1952 period (left chart).

In spite of the decline since early February, total awards for the first 11 weeks (right chart) are $368 million. That's only 5% behind the corresponding 1952 period, since federal contracts started off January in unusually high volume. It's possible that some projects were rushed in the contract stage, anticipating economy moves by the new administration. The biggest factor in this large January volume was a $40-million contract for construction of an Atomic Energy Commission plant at Richland, Wash.

• **All types hit**—But since the economy order came out, all types of federal work have been slowed down. The order provides that no contracts are to be awarded until they have been cleared with department heads.

Comparing February with January, the biggest declines have been in earthwork and waterways contracts, federal highway awards, and federal housing contracts.

Airport contracts, the largest single item in 1953 federal awards, dropped 27% in February from average weekly volume in January. Lately, airport awards have dropped even more sharply.

PNYA reports:

Tunnels, bridges, help offset air, bus port deficit

The six tunnels and bridges operated by the Port of New York Authority are providing the bulk of the authority's revenues. That's indicated by the financial report for 1952, published last week.

The authority took in about $53.8 million in revenue last year, up about 7% from the year before. About 70% of this was provided by the six tunnels and bridges, which increased their revenues about 5.5% over 1951. Howard S. Cullman, authority chairman, reported that the tunnels and bridges were used by more than 73,000,000 vehicles in 1952, an 8.3% gain over 1951. Average toll per vehicle was lower because of greater use of commutation tickets and a higher proportion of passenger cars.

However, the four airports which the authority runs, and its big bus terminal on Manhattan's West Side failed to make enough to pay debt service requirements. The result is that the authority's reserve funds decreased by about $2 million during the year. They now total about $31 million.

• **$550 million**—But Cullman is confident that the authority will be able to get financing for future plans. He said last week that PNYA is now working on or considering projects which will require about $550 million of capital funds in the next 10 years, in order "to keep pace with the constantly expanding terminal and transportation requirements of land, sea and air traffic in the metropolitan region."

The authority is now working on a $90-million third tube for the Lincoln Tunnel, to take care of increasing traffic to and from New Jersey and Manhattan.

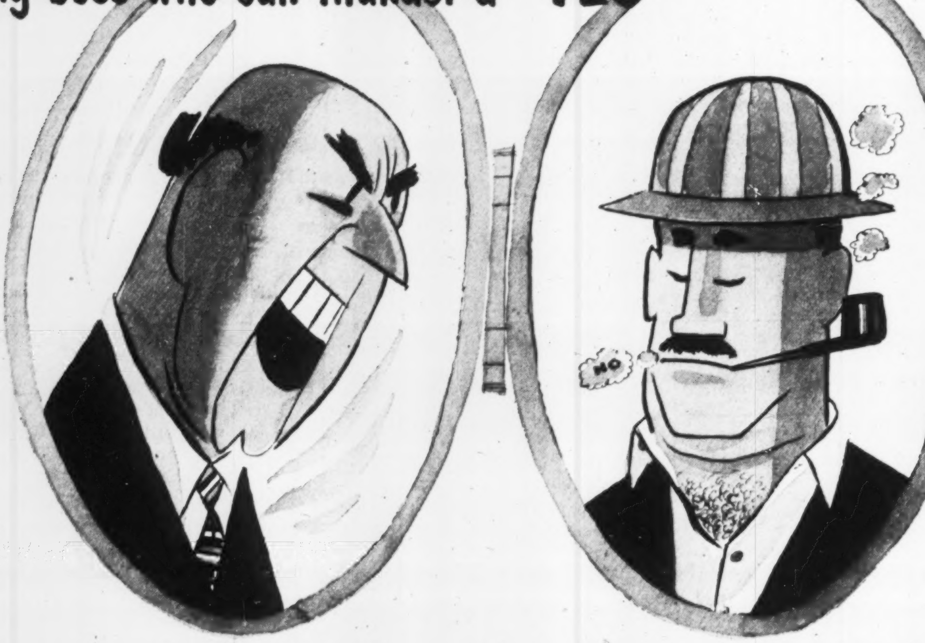
The four airports run by PNYA—La Guardia, Newark, New York International, and Teterboro—took in about $7.9 million in revenue, up almost 12% over 1951 to a new high. But after paying much higher operating expenses, the airports ran $1.2 million short of meeting debt service charge. One reason for this deficit was that Newark Airport was closed or operating on a limited basis for nearly the whole year, because of the tragic series of plane crashes in nearby Elizabeth, N. J.

• **More buses**—PNYA said that its Manhattan bus terminal also failed to meet debt service charges. However, it took in about $2.3 million, of which about 59% was paid by tenants and concessionaires, rather than bus companies. Its net revenue, after operating expenses but before debt charges, was $294,000, compared with an operating loss of $29,000 in 1951. There were about 818,000 bus runs from the terminal, an increase of 3.5% over 1951. More than 40,000,000 passengers used the terminal.

Sewerage awards hit new highs; seen good for rest of year

It appears that 1953 is going to be a banner year for sewerage contractors. For the first 10 weeks of 1953, sewerage contract awards reported to Engineering News-Record were $74 million, an all-time high for this season of the year. Because of several big awards, like the $9.2-million Miami, Fla., contract, total awards are running 17% ahead of 1951, the previous record year. They're more than twice the volume for the first 10 weeks of 1952. And, judging from ENR's backlog of

the big boss who can thunder a "YES"



and the little boss who quietly shakes his head "NO"

Both types are important to you because both have to be sold on your product. In *every* important buying decision in this business of building, many bosses have their say before the final "OK" is given. You can't afford to overlook any of the many types and kinds of bosses that can affect your sale.

Bosses of all sizes, shapes, titles and jobs read Engineering News-Record every week because they need a reliable flow of information on all the forces and factors that make construction tick. The only place they can get all this information – and get it quickly, concisely, lucidly, and all in one package – is Engineering News-Record.

These bosses are the guys who say "yes" or "no" to everything that goes into a construction project. You can reach more of them through Engineering News-Record than any other way.

in construction, it takes many bosses to make one purchase

ENGINEERING
NEWS-RECORD

A McGRAW-HILL PUBLICATION, 330 WEST 42nd STREET, NEW YORK 36, N. Y. • ABC • ABP proposed projects, business should continue to be very good in this field through the rest of 1953.

A substantial part of the increase represents awards for new sewage treatment plants.

Most of these projects are being pressure over the years by public agencies for better handling of municipal and industrial wastes, and the fact that materials are easier to get now than they were last year.

The outlook is good for some time to come: ENR's backlog of proposed sewerage projects grew twice as fast in 1952 as in either of the two previous years.

Last year, new projects estimated to cost $636 million were proposed. In the first two months of this year another $144 million in proposed sewerage work was added to the backlog total, which now stands at $2,843 million.

The backlog is growing fastest in the western states—notably California, Texas, and Kansas.

FHA gets broader powers to insure home additions

Home builders and contractors got a break last week when President Eisenhower signed a congressional resolution boosting the Federal Housing Administration's authority to guarantee loans for home improvement. Before then, FHA could "insure" at total of $1,250 million of such loans at any one time. Now it can guarantee up to $1,750 million worth.

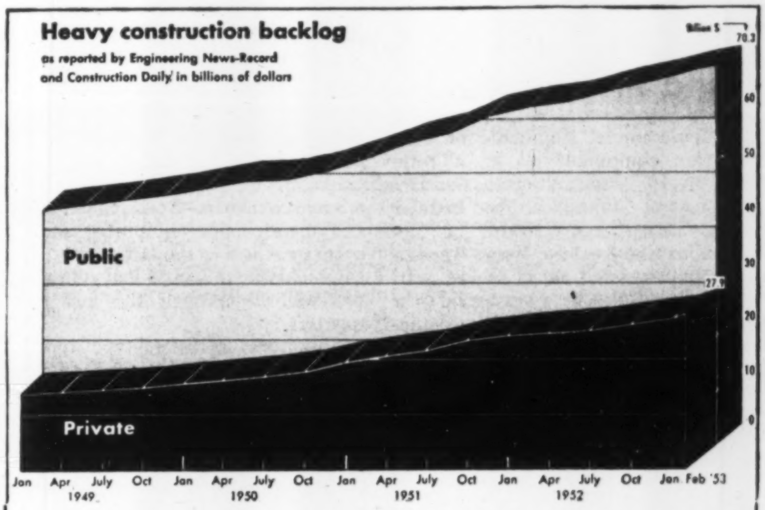
That frees about 390,000 home-improvement loans already approved by banks, which were held up for lack of a guarantee. FHA reached its $1,250-million established limit last September.

Since then, it has been able to make new guarantees only as existing insured loans were amortized. Lately, amortizations have been running at the rate of about $100 million a month.

The home-improvement program works like this: FHA guarantees loans made by banks to individuals. In return for this service, the banks pay FHA ¾ of 1% of the face value of the loan.

Borrowers amortize their loans monthly. They pay an annual rate of 9.7% on the average amount outstanding.

FHA has guaranteed about 14.3 million home-improvement loans since the program started in 1934. Loans are now being granted at the rate of about two million annually.



The ENR backlog of heavy construction climbed to $70.3 billion by the end of February. That's a new high (chart).

The private work backlog advanced the most in February. More than $1 billion worth of private construction was proposed last month, approximately twice the dollar volume of February, 1951. The total of public construction proposed in February was $600 million.

In private construction, new proposed commercial building projects were outstanding. During the first two months of 1953, there was an increase of 170%, in this category with a record total of $343 million proposed in February alone. Proposed industrial building projects totaled $276 million in February, and for the first two months were double the dollar value of projects proposed in the similar period of 1951. There was also a large volume of proposed work for pipelines and private mass housing projects.

In public construction, nearly all types reported by ENR showed a higher volume of proposed work in February, 1953, than in February, 1952. The only exception was the "unclassified" category.

Highways were the biggest item in February. In fact, for the first two months of the year almost six times as much highway work was proposed as in the 1952 period. The story is the same for bridges. And proposed earthworth and waterways projects show an increase of 10 times the same 1952 period.

City would use revenue bonds to help school

Revenue bonds, the tax-exempt securities issued by local governments, are getting all sorts of unusual applications these days. Just this month, for instance, Mayor Charles P. Farnsley of Louisville, Ken., decided to get the OK of the board of aldermen on an issue of revenue bonds to pay the costs of repairing a high school stadium. Courts had ruled recently that the Louisville Board of Education could not use its funds for repair of the stadium, or sell bonds which would be a general obligation of the taxpayers.

The stadium went without maintenance through the depression, and last year was declared unsafe. A group of engineers who have examined the structure say it could be put in shape for $100,000.

What Farnsley proposes to do is to get the city to issue revenue bonds, to be paid off by stadium receipts. In this way, the city's debt would not be increased. Walter Girdler, president of the Board of Education, says his board would issue the bonds itself, but doubts if it has the authority. If the city issues the bonds, it would take title to the stadium and lease it to the school board for an annual rent.

Housing starts rise

Housing starts were 77,000 in February, up 8% over January, according to the Bureau of Labor Statistics. That's at an annual rate of 1.2 million, total starts for both months are 148,000, slightly above the similar period in 1952. BLS also has just reported that urban building construction in 1952 was $8.9 billion, about the same as in 1951, but 15% under the record $10.5 billion worth of construction put in place in 1950.

1952 best yet for equipment makers; trend may continue this year

Manufacturers' shipments of construction equipment set an all-time high in 1952, according to the Department of Commerce. And because heavy construction awards as reported to ENGINEERING NEWS-RECORD —are running well ahead of last year, 1953 should also be a very good year for makers of construction equipment. However, manufacturers' backlogs of unfilled orders are down substantially this year. It looks as if they will have to get out and sell in 1953.

These set new records in 1952:

- Power shovels and cranes—up 11% from 1951.
- Road construction and maintenance equipment—up 5%.
- Equipment for mounting on tractors—up 19%.
- Track-laying tractors—up 6%.
- Wheel-type tractors—up 18%.

Two groups showed big declines in 1952. They were: (1) heavy-duty off-highway trucks and wagons, which was down 11%, and (2) the category which Commerce labels "other excavating and earthmoving equipment," down 46%. This includes loaders, discs used in road construction, and blade-type ditchers and trenchers.

Total shipments of construction equipment were down in the second half of 1952. In part, this was the normal seasonal trend. The usual pattern is for the largest volume to come in the first half, with a decline in the third quarter and then a pick-up in the fourth quarter.

• Steel strike again—But this pattern was accentuated in 1952 by the steel strike, which tended to cause a postponement of construction jobs. That in turn led to delays in equipment orders. Actual production of construction equipment was not much affected by the two-month strike. Manufacturers had enough steel to get through this period.

Though production held up, shipments dropped 34% in the third quarter. In the last quarter of 1952, there were some but shipments in this quarter were still 8% below the same period in 1951. That was the first time since early 1950 that shipments of construction equipment in any quarter were less than the same quarter of the preceding year.

During the last quarter, these categories showed higher volume than in the same 1951 period: power cranes and shovels; tracklaying tractors; equipment for mounting on tractors, and portable blast-hole drills.

• Some weakness—Road construction and maintenance equipment showed some weakness in the last quarter. But shipments in this class had run ahead of 1951 all through the first three quarters.

Shipments of wheel-type tractors, after hitting a new high in the second quarter of 1952, declined through the third and fourth quarters. Shipments in the final quarter were 50% under the same 1951 period.

There should be considerable buying of construction equipment this year. Contracts awards as reported to ENR show that in the first 11 weeks private construction is 48% ahead of last year, while state and municipal contracts are up 41%. Nearly all major types of construction show big gains in volume of contract awards.

However, these factors should also be considered: Residential construction, a very important part of total private construction awards, does not use much of this equipment. State highway department purchases of this class of equipment are budgeted 10% lower this year. And federal construction—a heavy user—is down so far this year (page 101) though it should come back later.

Business briefs . . .

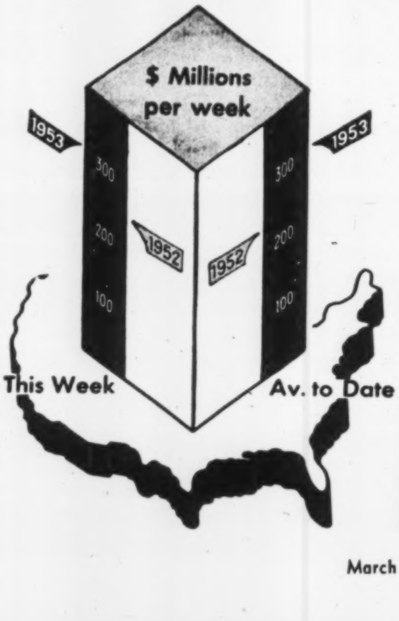
• Industrial corporations have put out huge amounts in the past decade or so on construction of new plants and new equipment. U. S. Steel Corp. for instance, reported this week that it has spent $2,265 million since 1940 on production facilities. In 1952 alone, Big Steel spent $469 million, and at the year end had plans to spend about $506 million more. General Motors Corp. has just reported that since 1945 it has spent or committed itself to spend about $2,500 million on plant and equipment. Of this, $629 million was put out last year.

• Public utilities have also been doing a lot to keep the construction and construction-materials industries rolling along at top speed. Pacific Gas & Electric Co., one of the biggest, has spent one billion dollars on its postwar construction program. It plans to spend about $500 million more by the end of 1955. Commonwealth Edison Co. of Chicago, another big utility, says it has spent $600 million since 1945, and plans to spend another $500 million during the next four years.

• Aluminum production is moving up, as aluminum plants in the Pacific Northwest get more hydroelectric power. The Aluminum Assn. reports that production was 180,000,000 lb in January, up about 26,000,000 lb from a year ago.

Activity This Week

As reported to ENR
(in millions of dollars)



Contracts by type of work

	This Week	Cumulative 12 wks— 1953	1952	% chge
Waterworks .	$9.3	$57.3	$61.6	—7
Sewerage ...	6.2	83.2	45.1	+84
Bridges	5.8	214.5	60.6	+254
Highways ..	27.0	276.0	237.5	16
Earthwork, waterways .	0.7	90.0	93.5	—4
Buildings:				
Public	18.2	379.4	350.6	+8
Housg., pub.	4.6	170.5	207.9	—18
Housg., priv.	67.2	975.9	640.9	+52
Commercial	14.7	195.2	113.4	+72
Industrial..	136.4	959.9	634.7	+51
Unclassified.	26.0	363.6	310.6	+17
Total	**$316.1**	**$3,765.5**	**$2,756.4**	**+37**

NOTE: Minimum size projects included are: Waterworks and waterway projects; $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	**Mar.**	**587.44**	**282.38**	**123.15**
	Feb.	587.19	282.26	123.09
Bldg. cost..	**Mar.**	**424.89**	**229.68**	**120.78**
	Feb.	425.24	229.87	120.88
Volume	**Feb.**	**480**	**195**	**139**

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. SEND ALL ADVERTISEMENTS TO CLASSIFIED ADVERTISING DIVISION, 29TH FLOOR, McGRAW-HILL PUB. CO., INC., 330 W. 42 ST., N. Y. 36, N. Y.

Bids: March 26, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 26th day of MARCH 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1 G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York				
Albany	C.T. 53-5	New York State Thruway-Catskill Section Subd. 5 (Volman Kill	0.11	9" Cem. Conc. Pavt. 2 at 25' Wide Br. & RR: Sep; Alpha I-Beam N. B. 448.5' S. B. 403	$52,000 Plans $10	$955,000
Rensselaer	FASS 53-2	Miller Hill Road (Proj. S384(1)	1.86	Asp. Conc. Ty 1A, Opt.	$12,000 Plans $10	220,000
Schenectady	FAC 53-7	City of Schenectady; Broadway (Edison Ave. to Thruway Spur) Proj. U655(5)	0.20	9" Cem. Conc. Pavt. 60' Wide	$6,000 Plans $10.00	103,000
		DISTRICT No. 2 L. Ketchum, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Montgomery	M.T. 53-5 ST.. 53-13	New York State Thruway- Mohawk Section, Subd. 12C (Caroga Creek-Fort Plain) Co. Rd. 65; Acc. Rd. Lock 15	Acc. 1.96 Thy. 2.26	9" Cem. Conc. Pavt. 2 at 25' Wide = 2.26 Mi. Asp. Conc. Ty. 1A, Opt. = 0.84 Mi. Gravel Surf. Rd. = 1.12 Mi. RR. Sep. Alpha I-Beam 44.5'	$140,000 Plans $25	2,652,000
		DISTRICT No. 4 E. G. Youngmann, Dist. Eng., Barge Canal Terminal, Rochester, N. Y.				
Genesee	O.T. 53-6 S.T. 53-14 S.T.C. 53-15 R.C. 53-24	New York State Thruway- Ontario Section, Subds. 3 & 4 (Slusser Rd.-Rte. 33); 9 Town Or Co. Cross Rds. Batavia-Elba, S. H. 853; Alabama-Batavia, Pt. 2, S. H. 1402	Acc. 5.68 Thy. 11.91	9" Cem. Conc. Pavt. 2 at 25' Var. Wide = 12.37 Mi. Asp. Conc. Ty. 1A, Opt. = 2.59 Mi.; Fdn. Crse. Grav. = 2.41 Mi.; Misc. Work = 0.22 Mi.; 7 Hy. Seps., Alpha I-Beams 203.6', 268.1', 342.4', 251.3', 215.1', 207.3' & 227.4' 1 Hy. Sept. Conc. Rigid Fr. 32.8' 1 RR. Sep. Two Cont. I-Beams 195'	$400,000 Plans $100	7,150,000
Genesee	O.T. 53-5 S.T. 53-11 R.C. 53-22	New York State Thruway—Ontario Section, Subds. 1 & 2 (Erie Co. Line-Slusser Rd.) Lake Rd.; Indian Falls-East Pembroke Rd.; Corfu-Indian Falls, Pt. 2; Indian Falls-Alabama, S. H. 8245	Acc. 1.58 Thy. 0.45	9" Cem. Pavt. 2 at 25' Wide = 0.45 Mi.; Asph. Conc. Type 1A, Opt. = 1.44 Mi.; Found. Crse. Grav. = 0.04 Mi.; Misc. Work = 0.10 Mi.; 3 Hy. Seps. Alpha I-Beams, 178.5', 278', 243.7'; 1 Hy. Sep. R. C. Closed Box 32.89' 1 RR. Sep. Alpha I-Beam 192' 1 Br. R. C. Twin Box 46' 1 Br. Alpha I-Beam 177'	$135,000 Plans $50	2,505,000
		DISTRICT No. 5 C. R. Waters, Dist. Engr., 65 Court Street, Buffalo, N. Y.				
Erie	FAC 53-9	City of Buffalo: Fuhrman Boulevard (High Level Br. Cont. 2) Proj. No. U750(6)	0.56	No Approach and Ramp "C" Embankment and Substructure No. Abut., Piers 25-30 and Bents 31-45	$43,000 Plans $15	774,000
		DISTRICT No. 7 R. W. Sweet, Dist. Engr., 444 Van Duzee Street, Watertown, N. Y.				
Jefferson	FAC 53-8	West Main Street: City of Watertown Proj. No. U1106(1)	0.75	Asph. Conc. Type 1A, Opt. = 0.71 Mi.; Misc. Work = 0.04 Mi.	$22,000 Plans $15	422,000
		DISTRICT No. 8 J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Orange & Rockland	C.T. 53-6 S.T. 53-12 R.C. 53-23	New York State Thruway—Catskill Section, Subd. 7 (Suffern-Harriman, Pt. 1) 12 Town or County Cross Roads Rockland Co. Line-Tuxedo, S. H. 416	Acc. 3.56 Thy. 12.84	9" Cem. Conc. Pavt. 2 at 37' Wide = 13.36 Mi.; Asph. Conc. Type 1A, Opt. = 2.02 Mi.; Found. Crse. Gravel (Cal. Chloride Treated) = 1.02 Mi.; 9 Hy. & RR. Seps. Alpha I-Beams 259.2', 289.3', 107', 104', 148' 177.5' 354', 426' & 428' 2 Brs. Alpha I-Beams 57.4' & 67.4' 1 Br. Reinf. Conc. Twin Closed Box 109.8'	$1,000,000 Plans $100	19,274,000
		DISTRICT No. 9 F. W. Donovan, Dist. Engr., 71 Frederick Street, Binghamton, N. Y.				
Schoharie	FASS 53-3	Breakabeen-Broome Center Proj. No. S368(1)	4.65	Bit. D. S. T. Graded Gravel	$18,000 Plans $15	331,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

INSURE COMPETITION

and get the lowest possible bid for your proposed work by placing your bids wanted advertising in this Section.

Don't limit competition to local bidding alone. Bring it to the attention of contractors the country over. They read this Section every week—make sure your bid is here where they can read it.

OFFICIAL PROPOSALS

Bids: March 30, 1953

Additions to Sewage Treatment Plant

Sealed proposals will be received by the Borough of Waynesburg, Greene County, Pennsylvania, until 8:00 o'clock P.M. (Eastern Standard Time) on March 30, 1953, at which time and place the bids will be publicly opened and read aloud, for the Construction of Additions to Primary Sewage Treatment Plant and Miscellaneous Appurtenances. The work will be divided into four contracts and separate proposals will be received for each of the following contracts:

Contract No. 1—General Construction of Additions to Primary Sewage Treatment Plant, including mechanical work.

Contract No. 2—Plumbing for Additions to Primary Sewage Treatment Plant.

Contract No. 3—Heating for Additions to Primary Sewage Treatment Plant.

Contract No. 4—Electrical Work for Additions to Primary Sewage Treatment Plant.

Copies of the Plans, Specifications, Proposal Forms, and other Contract Documents may be examined at the office of William E. Sees, Jr., Consulting Engineer, 222 North Third Street, Harrisburg, Pennsylvania or at the office of the Secretary of the Borough of Waynesburg, Pennsylvania. A complete set of bidding documents, may be obtained at the office of the Engineer upon a deposit of $30.00 for each set of documents. If the documents are returned in good condition within five (5) days after the opening of the bids, $15.00 of the deposit for one set will be refunded. If the documents are not returned within the time stated, the entire amount of the deposit will be forfeited. A certified check equal to five percent (5%) of this amount of the bid must be submitted with the proposal as bid security. Separate checks must be submitted for plans and specifications for each contract.

No bid may be withdrawn for forty-five (45) days after the scheduled time for receipt of bids.

The Borough of Waynesburg reserves the right to waive any informalities in or reject any or all bids.

K. W. Scott, Secretary
Borough of Waynesburg
Greene County, Pennsylvania

Bids: April 2, 1953

Construction of Structures

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., (Eastern Standard Time), the 2nd day of April 1953, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania and immediately publicly opened and read aloud, for the following contract and/or contracts.

For the construction of structures and the grading, drainage, and paving of Turnpike Section 32C, part of the Delaware River Pennsylvania Turnpike Extension in Plymouth Township, Montgomery County, Commonwealth of Pennsylvania, this section being situated as follows:

Beginning at a point approximately 149 feet east of the center line between tarcks of the Norristown Branch (P. G. & N. RR) of the Reading Railroad on the east bank of the Schuylkill River in Plymouth Township, Montgomery County, at Turnpike Station 385+03.72 and thence in an easterly direction 15,063.12 feet to a point 15.3 feet west of the center line of Township Road 357 at Turnpike Station 535+85.89 in Plymouth Township, Montgomery County, a distance of approximately 2.85 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	893,660 cubic yards
Class 2 Excavation	19,740 cubic yards
Special Subgrade	200,683 square yards
Reinforced Concrete Pavement	105,284 square yards
Class "A" Concrete	7,199 cubic yards
Class "B" Concrete	5,196 cubic yards

For the construction of structures, and the grading, drainage, and paving of Turnpike Section 32D, part of the Delaware River Pennsylvania Turnpike Extension in Plymouth and Whitemarsh Townships, Montgomery County, Commonwealth of Pennsylvania, this section being situated as follows:

Beginning at a point approximately 351 feet west of the center line of Township Road 357 at Turnpike Station 532+50 in Plymouth Township, Montgomery County thence in a easterly direction 17,220 feet to a point approximately 894 feet east of the present center line of Legislative Route 153, Traffic Route 309 at Turnpike Station 704+40 in Whitemarsh Township, Montgomery County, a distance of approximately 3.26 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	696,894 cubic yards
Class 2 Excavation	9,979 cubic yards
Special Subgrade	155,252 square yards
Reinforced Concrete Pavement	85,879 square yards
Class "A" Concrete	4,063 cubic yards
Class "B" Concrete	5,770 cubic yards

Copies of plans, specifications, and other contract documents, including cross-sections are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 12 March 1953. Copies of specifications for grading, drainage, paving, and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5.00) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty ($50.00) dollars per set, for each section.

Plans and contract documents exclusive of cross-sections and specifications may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans, contract documents, and cross-sections returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The Pennsylvania Turnpike Commission reserves the right to award each section as a separate contract or in a combined contract.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
March 5, 1953

Bids: April 1, 1953

Project WVA 46-P-5A, Unit One, Sub-Sections 1 & 2 Elk River & Porter's Hollow Interceptor Sewers Charleston, W. Va.

NOTICE TO CONTRACTORS

The Sanitary Board of The City of Charleston, Charleston, West Virginia, will receive sealed bids for "Elk River & Porter's Hollow Interceptor Sewers" until 2 P.M. Eastern Standard Time on the 1st day of April, 1953, at the office of the Sanitary Board, Room 15, City Building, at which time and place all bids will be publicly opened and read aloud.

The successful bidder will be required to furnish a satisfactory performance bond in the amount of 100 per cent of contract.

Liquidated damages for delay will be One Hundred Dollars ($100.00) per day for each calendar day beyond the date specified in the contract.

The contract documents, including plans and specifications, are on file at the office of the Sanitary Board, City Building, Charleston, West Virginia, and at the office of Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, where they may be examined free of charge.

Copies of the documents may be obtained by depositing Forty Dollars ($40.00) with Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, for each set of documents so obtained. The amount of the deposit for one (1) set of documents will be refunded to each actual bidder who returns the plans and documents in good condition within five (5) days after the opening of bids.

The Sanitary Board of The City of Charleston reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or cashier's check, payable to The Sanitary Board of The City of Charleston, West Virginia, or a satisfactory bid bond executed by the bidder and a surety company authorized to do business in West Virginia, in an amount equal to five per cent (5%) of the bid or an equal amount of U. S. Government Bonds, shall be submitted with each bid.

No bid may be withdrawn, after the scheduled closing time for receipt of bids, for at least thirty (30) days.

ESTIMATE OF
PRINCIPAL QUANTITIES:

1,600	lin. ft. 27" pipe in liner plate tunnel
1,330	lin. ft. 30" Pipe, open trench
2,900	lin. ft. 24" Pipe, open trench
10,000	lin. ft. 18" Pipe, open trench
5,200	lin. ft. 12" Pipe, open trench
215	cu. yds. Class A Concrete Regulator Manholes
840	vert. ft. Manholes
300	lin. ft. 12" C.I.P. in tunnel
200	lin. ft. 18" C.I.P. in tunnel

THE SANITARY BOARD OF THE CITY OF CHARLESTON,
By: F. Duane Hill
Secretary
Date: Mar. 11, 1953

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF HIGHWAYS, D. C., February 26, 1953. SEALED PROPOSALS will be received in Room 404, Library Building, 499 Pennsylvania Ave., N.W., Washington 1, D.C., until 2:00 P.M., April 2, 1953, EASTERN STANDARD TIME, and then publicly opened and read for constructing A BRIDGE OVER KINGMAN LAKE AND ANACOSTIA RIVER ON EAST CAPITOL STREET EXTENSION. The bridge will consist of fifteen (15) plate girder spans of approximately one hundred twenty feet (120') each for six (6) lanes of traffic with reinforced concrete floor and reinforced concrete abutments and piers on steel piles. Approximate quantities of major items are: 13,730 cubic yards excavation, 51,830 lineal feet steel H piles, 3,760 cubic yards tremie concrete, 6,500 cubic yards substructure concrete, 4,800 cubic yards superstructure concrete, 1,700,000 pounds reinforcing steel, 3,875,000 pounds structural silicon steel, 4,100,000 pounds structural carbon steel and 4,060 lineal feet of handrail. Bids will be received for three (3) alternates involving either the entire structure, the substructure only, or the superstructure only. Proposal forms, plans and specifications may be obtained from the Secretary, Contract Board, D.C., Room 406, Library Building, 499 Pennsylvania Avenue, N.W., Washington 1, D.C., by general contractors only, upon deposit of a certified check for each set, made payable to the Collector of Taxes, D. C., in the amount of FIFTY DOLLARS ($50.00). Telephone NAtional 8-6000, Extension 2378.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3907) will be received at Field Office "A" 3rd and "A" sts. S. E. Ephrata, Washington, until 10 a.m. Pacific Std. Time, April 16, 1953, for furnishing labor and materials for Pumping Plants, Area E-5, East Low Canal Laterals, Columbia Basin Project, Washington. Location: One to three miles north and west of Warden, Grant County, Washington. Principal items are: Excavation, 27,000 cu. yds.; concrete, 950 cu. yds.; furnishing and laying 12,000 lin. ft. of concrete pipe; installing 264,000 lbs. of pumps, valves, and metalwork; and other work. Completion time 420 days. For particulars, address Bureau of Reclamation, Ephrata, Washington; or Building 53, Denver Federal Center, Denver, Colorado.

FRED G. AANDAHL, Assistant Secretary
for Water and Power Development
Department of the Interior

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

Bids: March 31, 1953

Rt. 43 (1927)—Rt. U. S. 30 (1953), Sec. 12-E

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 43 (1927)—Route U. S. 30 (1953), Section 12-E, from Hamburg Avenue, Egg Harbor City, to Union Avenue, Elwood, Resurfacing Eastbound Roadway, Mullica Township, Atlantic County. Length 3.944 miles. The principal items of construction are:

Estimated:

33,000 sq. yds. Reconstructed Gravel Shoulders
11,330 tons Bituminous Concrete Surface

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, March 31, 1953, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a resvised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: March 31, 1953

Clearing and Grubbing Pepacton Reservoir

CONTRACT 416

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, March 31, 1953, for Contract 416, for clearing and grubbing the westerly half of the Pepacton reservoir, in preparation for the storage of water. The work will comprise the clearing of approximately 3,800 acres, the grubbing of about 700 acres, and required excavation and removal of excrementitious material, all as set forth in the specifications. This portion of the Pepacton reservoir is located in the Towns of Colchester and Andes, Delaware county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of seventy thousand dollars ($70,000.00) for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1316 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: April 7, 1953

Interior Finish for Room 2222 (Gutmans Hardware Store)

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
CONTRACT BT-110.075

Sealed proposals for the furnishing and installation of interior finish and equipment for Room 2222 on the Suburban Concourse of the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 7, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, March 19, 1953

Bids: April 2, 1953

Installation of Traffic Gates and Guard Booth

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT O & M 180

PROPOSAL NO. 53

Sealed proposals for the installation of Traffic Gates and Guard Booth at New York International Airport, Jamaica, N. Y., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111-8th Ave., New York 11, until 11:00 A.M. Thursday, April 2, 1953, at which time and place proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, The Port of New York Authority, Room 900, and copies will be furnished upon deposit of $25 per set. The deposit will be refunded if the documents are returned in good condition, not later than thirty (30) days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, N. Y.

Bids: March 31, 1953

Landscaping

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
PASSENGER TERMINAL

CONTRACT NA-170.043

Sealed proposals for landscaping at the Passenger Terminal at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M., Tuesday, March 31, 1953 at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, March 19, 1953

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(Continued on page 111)

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(Continued from page 110)

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(Continued on page 112)

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POSITIONS WANTED
(Continued from page 111)

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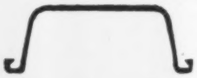

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1—Adnun Blackton Paver, Serial No. 1300	$6,850
1—Adnun Blacktop Paver, Serial No. 1442	5,625
1—Buffalo-Springfield 3-wheel, 10 ton gasoline roller	1,850
1—Buffalo-Springfield 3-wheel, 10 ton gasoline roller	2,225
1—Buffalo-Springfield 3-wheel, 10 ton gasoline roller	2,225
1—Galion 3½-5 ton roller	1,250
1—Austin-Western 8-10½ ton tandem roller Serial No. T-2448	4,375
1—Gledhill Road Drag	440
1—450 Gal. Littleford Pressure Distributor, Trailer Mounted	625
1—Barber-Greene Model 44-C Ditcher, completely rebuilt including new engine	11,250

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Lorain Model 82, 2 Yd. Power Shovel. Good condition. S-2203 (B)
SALE PRICE F.O.B. LOUISVILLE, KY.
$18,500.00

1—Lorain Mdl. L50J Combination 1 Yd. Shovel and Lifting Crane with 60' boom, pendant suspension, 15' jib with Caterpillar D-318 diesel engine. Machine 2 years old. Very good condition. RSP-194 (B)
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1—Lorain Mdl. #77 Shovel w/2 cu. yd. Amsco Bucket, Caterpillar diesel engine. $3,000.00 in repairs since use. S-2184 (B)
SALE PRICE F.O.B. LOUISVILLE, KY.
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1—International Mdl. TD-24 Crawler Tractor with Bucyrus-Erie P-29 double drum power control unit. RS-1953
SALE PRICE F.O.B. LOUISVILLE, KY.
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LOUISVILLE Since 1908 KENTUCKY

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FOR RENT.—cranes, draglines, backhoes, buckets, and all other accessories.

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Lima 1201 drag, Cummins Diesel.

Northwest 95, w/ 75' boom, 2½ yd. bucket, Twin City Engine.

4 Cory Model 303 w/ ¾ yd. shovel front, 50' crane boom, ¾ yd. drag bucket Cat. 4600 engine. $8,500.

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IF THERE IS

Anything you want

that other readers of this paper can supply

OR—

Something you don't want

that other readers can use, advertise it in the

Searchlight Section

NEW PRODUCTS

Sound-powered telephones ease the job

With no electric power or batteries needed, they can be installed in many combinations to help speed work

A sound-powered telephone is just what its name implies. A person's voice actuates a mechanism in the mouthpiece to generate the current required to transmit the sound to another phone or any combination of them. In the illustrations at the right, for instance, a materials dispatcher working for a contractor on a multi-story building job and the hoisting engineer at ground level can converse in a normal tone with one another thus saving a great deal of time, preventing errors and eliminating the need for shouting or signaling.

On other construction sites they are used for communication between job office and job site; between office and parts or tool rooms; between steel connectors and crane tagmen; between ground men and shaft or mine workers and in a host of other installations.

The phones shown here are made by Wheeler Insulated Wire Co. and are available in several types and combinations.

• **Pair phone system**—The simplest basic intercom consists of two (or three) pair phone instruments, such as those pictured here. They are connected on a common ringing, common-talking circuit. Ordinary telephone-type twisted-pair wire is used—either wire connected to either terminal. The handset is removed and a bell-ringing lever depressed. At the end of its travel this lever releases a strip of metal that vibrates like a reed. A vibrating reed generator then sends enough current over the wires to ring the bell in the phone at the other end. Under short line runs (500 ft or under) three instruments may be connected together on a two-wire bridging, common-(code)-ringing, common-talking circuit.

By using two phones, inter-office or inter-plant communications can be maintained without holding up regular Bell telephone systems. They also can thus provide a private line where needed.

• **Multi-serviceintercom**—Master phone instruments are available to provide full selective ringing from any station to any other station with common talking between stations so that conversations may be held on a "conference" basis if desired. Up to twelve stations can be thus installed.

In this setup the call is made by lifting the handpiece, turning a station selector switch to the desired station location and tripping the ringing lever. All stations can, selectively, ring any or all other stations.

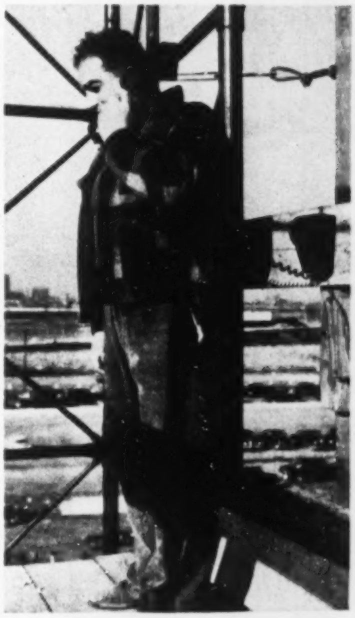
• **Master phone systems** consist of a master selector phone like that in the multi-service intercom with as many as eleven substation instruments similar to those in the pair phone system. The master phone can ring any one or, in succession, all of the substations, which can call only in to the master phone direct. Substation calls can be controlled, where desired, by the master phone operator and up to six stations can be operated thus on a conference basis.

• **Accessories and extras**—The Wheeler company provides several other accessories for use in banks, warehouses, hospitals, offices as well as on construction jobs. One of these is a visual neon glow lamp which substitutes for the bell and is particularly useful in extremely noisy locations or for locations where quiet is desired, such as hospitals, libraries, churches, sound stages and guard booths.

A self-contained relay can be factory-installed in place of the bell mechanism. The relay contacts are so terminated that they can be connected to a power supply, external bell, siren, or high-intensity signal lamp of a type within the rated capacity of the relay. Normal arcing at the relay contacts precludes the use of this relay on telephone instruments in hazardous locations.

In all ordinary intercom installations, the manufacturer claims that speech over the Wheeler sound-powered telephones is clear and undistorted to distances up to 20 miles. Handsets and housings are of high impact plastics. Alnico permanent magnets are used in telephone units, ringers and generators. Wheeler Insulated Wire Co., Inc., Waterbury 20, Conn.

(*Continued on page 123*)

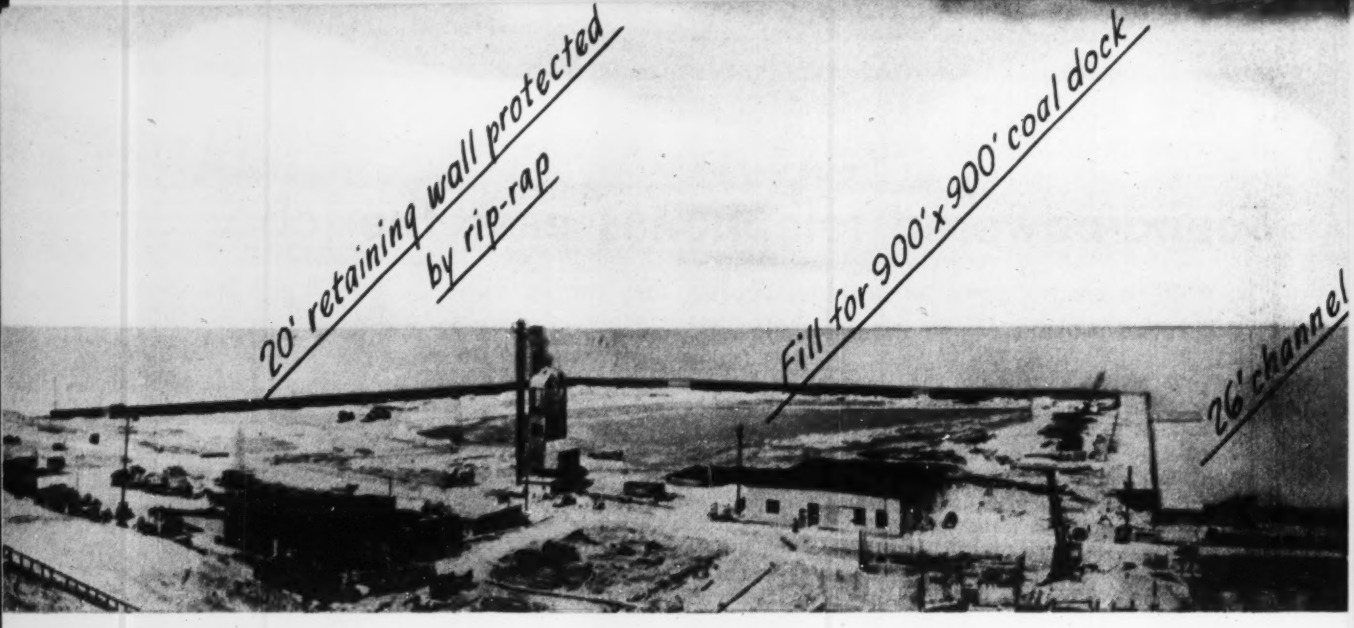


Up above . . .

Contractor's material man talks to truck-unloading crew several floors below with Wheeler sound-powered phone. Plug-in type phone is also available and jacks can be placed on as many floors as needed.

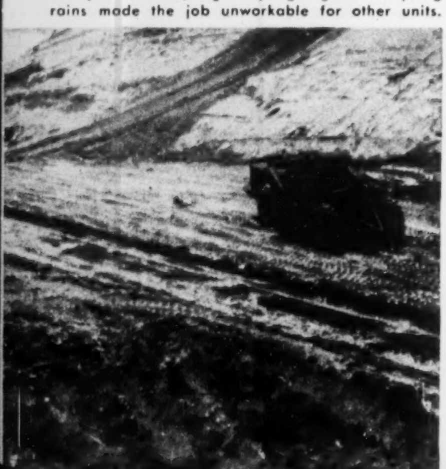
Down below . . .

Hoisting engineer has another phone within easy reach. He receives instructions on what succession of stops to make for pickups and deliveries; can also inform men aloft as to cause of delays, etc.


20' retaining wall protected by rip-rap
Fill for 900'x900' coal dock
26' channel

1,000,000-yd. coal dock completed for Wisconsin's largest power plant

Clocked for 2 hours on 1500' one-way haul, each C Tournapull made 15 trips . . . averaged 11.1 pay yards per trip in the sticky red and blue clay. Despite very soft footing and a 10% adverse grade on 1000' of the return trip, "C's" averaged about 7 minutes for each 3000' cycle. With their power-proportioning differential and positive electric power steer, rigs kept going when spring rains made the job unworkable for other units.

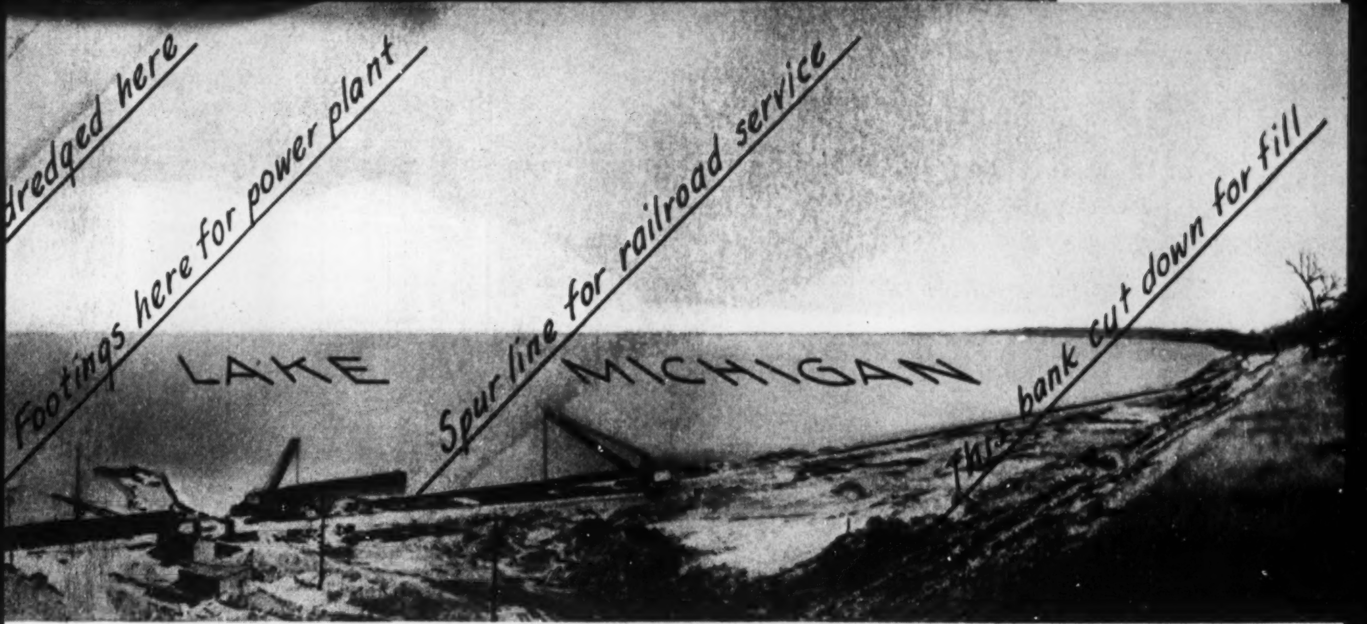


A. F. Keyes Co., South Milwaukee, Wisconsin, working on the A. B. Lynch Co. contract with the assistance of Earthmovers, Inc., Minneapolis, Minnesota, have just completed final grading on their year-long 1,000,000-yd. power plant job at Oak Creek, Wisconsin.

Cutting an access road and rail spur line through 107' clay bluffs and using material to build a 900 x 900' coal dock out into Lake Michigan, each of the 7 C Tournapulls moved 80 pay yards hourly on 3,000' cycles. Contractors' records covering one typical month show each "C" delivered an average of 1,230 loads in 168 working hours over this haul distance. Weighed loads, based on engineers' weight of 3,000 lbs. per cu. yd., figured out at 11.1 pay yards. Production for the month was 13,653 pay yards per machine.

Contractors consider this performance excellent under the tough conditions of grade, material, and weather. In the beginning, loads were made straight down 2-to-1 slopes to the beach. Later, as material could be taken further from the beach along a 3300' access road cut, grades ran from 4 to 35%. Water was a serious problem at all stages of construction. It came from creeks, continually flowing springs, and heavy rains. In addition, Lake

Rain, mud and high water made this one of the toughest dirt jobs ever handled in Wisconsin


dredged here
Footings here for power plant
LAKE
Spur line for railroad service
MICHIGAN
This bank cut down for fill

Lakefront site of the Wisconsin Electric Power Company's Oak Creek Plant, 14 miles south of Milwaukee. Dirtmoving included leveling beach area (center) for concrete construction now under way . . . moving 1,000,000 yds. of clay from beach access road (far left) and from 2-mile rail-line (right) into 19-acre coal dock (center) . . . hauling ballast . . . leveling parking areas. Sides of dock are protected by rip-rap and steel piling. The $100,000,000 plant will produce 500,000 kw.

Michigan was at its highest stage in 65 years. One month, contractors lost 55 out of 240 proposed working hours due to rain. One weekend, before pilings were in, a 2-day storm washed out 100,000 yds. of fill. The heavy clay material was always wet and slippery, often sinking the machines hub-deep. Footing was soft . . . in spite of maintenance, haul roads to the dock area were spongy, steep, and rutted. As a result, haul speeds averaged only 6 m.p.h.

"These Tournamatic Tournapulls did a good job," summarized Al Keyes. "They worked when our 3 tractors and scrapers couldn't. Our operators liked them a lot better than Super C's." Keyes, who is partner with his two sons in the company which bears his name, speaks from long experience. Eighteen years ago, he used the first LeTourneau Scrapers bought east of the Rockies. Since that time, as a partner with A. B. Lynch, he's owned Model B, J, YR, FP, and W Carryalls . . . 4 Super C Tournapulls . . . and now 3 electric-control Tournapulls and a rubber-tired C Tournadozer.

J. L. Hake of Earthmovers, Inc., another old-time dirtmover (since 1917), was equally enthusiastic. "The C Tournamatic Tournapull is the best earthmoving machine made," he says. "Its electric controls, plus short turning radius, really make it a mudhog." Hake also liked Tournapulls' roadability. Earthmovers' 4 "C's" were driven to the job site under their own power from Minneapolis . . . 565 miles in 22 hours (25.5 m.p.h.).

The experiences reported here are no exception. C Tournapulls have earned a wide reputation for being "good mudders". Job reports like this prove that their high speeds, economical application on short, medium and long hauls . . . and 100% mobility on rubber, will assure you of lowest-net-cost-per-yard operation under all job conditions. Write or call your LeTourneau Distributor. He will gladly demonstrate a "C" on your job.

Tournadozer dozes scraper-dumped clay into water 4 to 17' deep to build up dock. Says Operator Laurence Derk: "Tournadozer will move a lot more dirt than the biggest crawler. During our 10-hour day I handle output of 7 scrapers. One day, when the rigs were on a 500' to 600' haul, I dozed 6,390 pay yds. into the lake. Between times, I helped our 2 crawler-scrapers through on the spread. Even had time to travel uphill to clean up the edge of the cut."

Tournapull, Tournadozer, Tournamatic, Carryall—Trademark Reg. U. S. Pat. Off. PD-16-D

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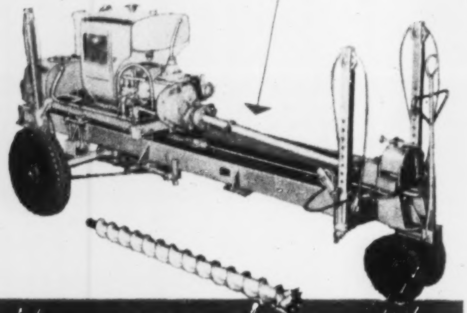
Tractor Mobility in an Economical One-Man Operated Unit

TRACTOR MOUNTED VERTICAL

Multi-Use Unit Saves You Time on the Job —and Between Jobs

Especially designed for jobs that require maximum mobility and fast drilling of many holes. The carefully engineered, rugged drill unit is driven by the standard farm type tractor. The auger is raised, lowered and fed into the work by a built-in hydraulic cylinder. Handles augers up to 6 inches or more in diameter. Augers are in 6-foot sections, available with any standard connection, for extension to any desired length. Augers can be added in just a few seconds



Self-Propelled HORIZONTAL HYDRAULIC

You'll drill more holes per day with this highly mobile unit, because you spend *more* time drilling, *less* time moving from hole to hole. Saves money, too,—you don't have to tie up a truck to move it. Has 32-H.P. air-cooled gasoline engine with power take-off and hydraulic pump. Augers are driven into the bank by a hydraulic piston. Standard auger equipment includes seven 6′ sections (42′ total) for drilling holes up to 6″ diameter. Wheels and axles can be easily removed to permit low level drilling.

STANDARD VERTICAL

Ideal for drilling blast holes or doing exploratory work in clay, gypsum, asbestos, shale, and other materials.

Simple, rugged and very easy to use. The weight of the engine forces the auger and cutter head into the material being drilled. Large hand wheel raises and lowers the power assembly easily. Mast can be lowered when moving unit. Available with 6½ H.P. or 12 H.P. air-cooled gasoline engine. Standard auger equipment includes 6-foot section for 2½″ or 3″ holes. Other sizes also available.

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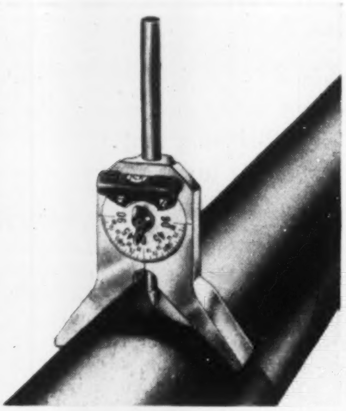
Phone: Robinson Creek 8



Centering head is described as "five tools in one"

The Boyce centering head is described by its maker as "five tools in one", replacing protractor, centerhead, centerpunch, level and scale. The pocket size device weighs 9 oz, can be used to measure or establish the degree of any angle or of the bend on outside or inside of any circumference. It also measures degree of declivity of any flat surface, mark a point at any degree from center on pipe or other round objects. Body is cast aluminum, dial is graduated in 2½ deg with 10-deg marks and punch is a ⅜-in. drill rod with hardened point. CONTOUR MARKER CORP., 1843 E. COMPTON BLVD., COMPTON, CALIF.

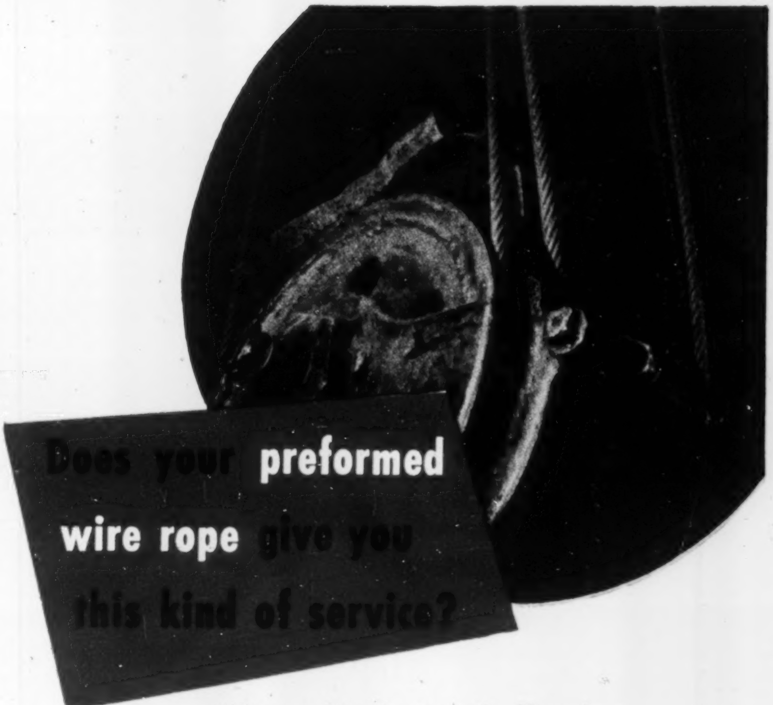
High bolt stresses with Corox hollow bolt heater

Just as structural steel beams are fastened together securely by the contraction of hot rivets as they cool, heated holding bolts on heavy equipment can be turned up tighter. Then, as the bolts cool, flanges are drawn together to make leak-proof joints.

Greater bolt stressing is now possible in large hollow holding bolts through the use of a new Corox bolt heater made by Westinghouse.

The heater is supplied in ratings from 1,000 to 6,200 watts at 120 v. Various heater element sizes permit installation of bolts one to three feet long and in hole diameters from ½ to 1 in. With the selection of proper power rating and size, heater life averages 500 hours, according to the manufacturer.

The heaters are of particular interest to fabricators and users of heavy steam equipment, and they can also be used for heating die blocks and large metal platens, etc. Holes in bolts or studs to accommodate the



Does your preformed wire rope give you this kind of service?

"Measured by the ton mile, Hercules Red-Strand preformed outlasts others about two to one," reports one operations manager. Another operator testifies, "Our records show Red-Strand is considerably out in front of four other ropes."

Why HERCULES Red-Strand excels

What's the reason for such performance and praise? In simple terms, it's because *higher-than-rated quality* in Red-Strand preformed delivers *longer-than-expected service.*

If you're not completely satisfied with *your* wire rope service, try Red-Strand preformed. You'll experience the difference too.

HIGHER-THAN-RATED QUALITY

LESCHEN WIRE ROPE AND SLINGS

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You'll find it easy to do better work with Arkwright Tracing Cloth—and here are three specific reasons why:

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They're important reasons for putting *your* best work on Arkwright Tracing Cloth. Like a sample? Write Arkwright Finishing Co., Industrial Trust Bldg., Providence, R. I.

ARKWRIGHT
Tracing Cloths
AMERICA'S STANDARD FOR OVER 30 YEARS

heater can be drilled while fabricating, during installation, or during a shutdown. Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

Air-conditioning unit is suitable for large rooms

A 1-hp air-conditioning unit designed for extra large rooms, stores and offices has been added to the Quiet Kool air conditioner line. The unit, Model G-10-A, cools up to 550 sq ft, circulates 310 cu ft per minute and introduces 80 cu ft of fresh air per minute for ventilation, according to the manufacturer. Room air is drawn in through a low, front grill to prevent interference with drapes or curtains.

The unit can be installed in any double-hung window 28¾ in. to 48 in. wide. The maker claims that two men can install it in 15 to 20 minutes with no plumbing connections necessary. The assembly uses Freon-22 refrigerant. Overall dimensions are 28½ by 14¾ by 30¾ in. deep. It extends 14¾ in. into a room and projects 16 in. outside the window. Net weight is 210 lb and the unit is available for either 230 v, 60 cycle or 230 v, 50 cycle operation. Quiet Kool Div., Quiet Heet Mfg. Corp., Newark, N. J.

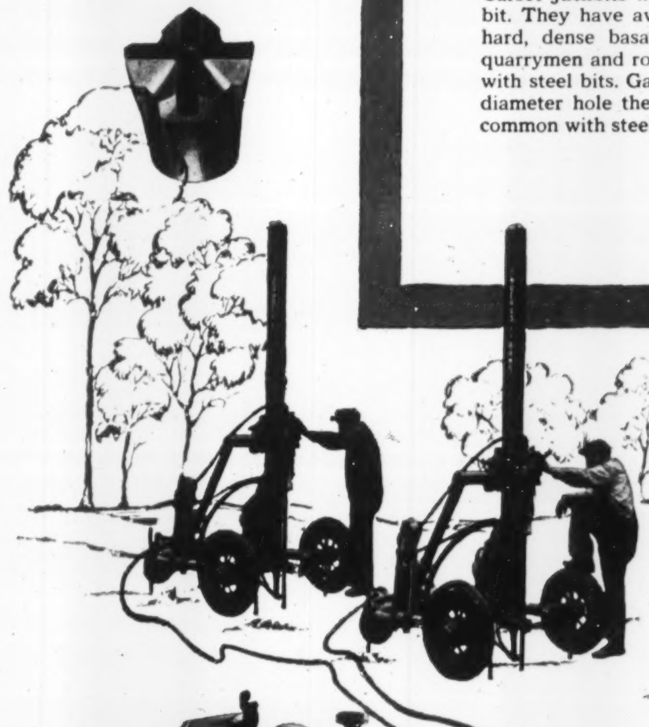
New Product briefs . . .

A totally-enclosed motor developed by U. S. Electrical Motors Inc., Box 2058, Terminal Annex, Los Angeles 54, California and designated as Type SS, is designed for service where dampness, dust, fire hazards and corrosive fumes prevail. It's self-cooling and comes in sizes from ⅓ to 2 hp. Lubriflush bearings are said to force new grease through the bearings for a thorough purge of the old grease.

Manco Mfg. Co., Bradley, Ill. has added another **Riveteer Unit,** Model R-20-185 to its expanding line (ENR Sep. 6 '51 p 123 and May 15 '52 p 138). It can handle rivets up to 4½ x ½ in. and is powered by a 10,000-psi hydraulic pump, operating from a 2-hp, 220/440-v 3-phase motor. Riveting unit weighs 65 lb; pump unit, 400 lb.

Dennis No. 8500 **plastic sealant** is a general purpose sealing compound **recommended for** almost any purpose where superior **glazing, caulking and waterproofing** compound is required. **Dennis Chemical Co., 2701 Papin St., St. Louis 3, Mo.** says it's non-drying, non-hardening, non-staining and non-contaminating.

3 steps to faster drilling



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PUBLICATIONS

Structural Bridge Flooring—A corrugated, formed steel plate flooring recommended for new or existing highway bridges, viaducts, overpasses and similar structures is the theme of this detailed 12-page booklet. Well illustrated throughout with photographs of various installations and uses, the booklet includes a general description of flooring details, design data and specifications. Copies of the "Structural-Plate Bridge Flooring" may be obtained by writing: United Steel Fabricators, Inc., Wooster, Ohio.

Jaw Crushers—For users of jaw crushers in mines, quarries or aggregate plants, this 7-page bulletin describes in detail, with schematic drawings, 10x16 in. jaws up to 30x42 in. jaws. Specifications and general dimensions are given for various requirements. Write for Bulletin No. 280 Smith Engineering Works, Milwaukee, 12, Wisconsin.

Porcelain Enamel—Typical construction details and many photographs of new shopping centers and other buildings where architectural porcelain enamel was used make up the body of this 12-page booklet. Architects and engineers may find the names of builders and designers listed with the illustrations of buildings where they have used the material. Write Davidson Enamel Products, Inc., Architectural Division, Department Z-53, Lima, Ohio.

Air Control Valves—This new 12-pager gives three-color schematic diagrams of the three fundamental types of industrial air control valves. With explanations and descriptions, it is of interest to engineers who need direct-operated, remote controled, or integral pilot operated air-power valves. Bulletin No. 101A. Ross Operating Vavle Company, 120 East Golden Gate Avenue, Detroit 3, Michigan.

Perforated Drain Tile—This 4-page folder gives tips on the proper installation of perforated drain tile for basement and foundation drainage, as well as sanitary septic tank disposal systems. It includes diagrams of home drainage plans and an effective septic tank disposal system, of interest to any house builder in areas unserved by regular sewage disposal systems. Write for "Perforated Drain Tile," E. C. Milliken, General Manager, Bowerston, Shale Company, Bowerston, Ohio.

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EDITORIALS

The real key to housing

Over the last few years the homebuilding industry has done a fine job in building for the various income groups while at the same time placing major emphasis on the low-income bracket. This is as it should be, to provide the nation with housing—and as it must be if anywhere near the million homes a year that are needed are to be built.

The low-income group holds the key to the housing problem. Providing it with new homes is the only way that the homebuilding industry can both discharge its responsibility and remain the prosperous, vital element in the economy that it deserves to be.

Periodically, the argument is advanced that the emphasis should be placed on building higher priced homes, which when they become "old" can be passed on to the low-income buyer. This filtering-down process usually receives most of its opposition from the social theorists who seem to feel that it is degrading in some mysterious way. The best that can be said for such views is that they are for the most part misguided. Many people who can afford a new home often prefer a used one. Actually, the case against the filtering-down process is one of simple economics, and it is on this basis that it should be opposed.

To begin with, it is obvious that there are far more people who can afford a low-price house than a high-price one. About twice as many persons, for example, earn enough to buy a $6,000-house as can afford a $10,000-house. And about five times as many people can buy a $10,000-house as can afford a $20,000-one. Hence, if homebuilders build for the $20,000-market and manage to saturate it, they have left unserved ten times as many families as they house. Even should they concentrate on and saturate the $10,000-market, less than one-half of the lower-income group could be housed in the dwellings thus freed to be filtered down.

Another point to be noted is that, until we are much nearer a market saturation point in the higher priced homes, there will not be much filtering down, at least at prices that the low-income group can afford to pay. Those used houses that are available at really low prices are apt to be of the kind that should be torn down to avoid the creation of slums. This is the one aspect of the social argument against filtering down that has force: in a period of housing shortage, low-income people should not be required to live in the type of used house that can be purchased at a low price.

Filtered-down housing will not meet the nation's needs. Only brand new low-cost shelter can do it. And only this type of housing offers the homebuilding industry enough of a market to assure growth and prosperity. The real key to housing is a soundly built low-cost house, mostly of the single-family type, but also in mass-type apartment houses where land prices make them necessary. The challenge to the homebuilders, in either event, is to develop and offer for sale or rent the type of living units that low-income people would like to live in at prices they can afford to pay. When this is done we can go on building a million housing units a year indefinitely.

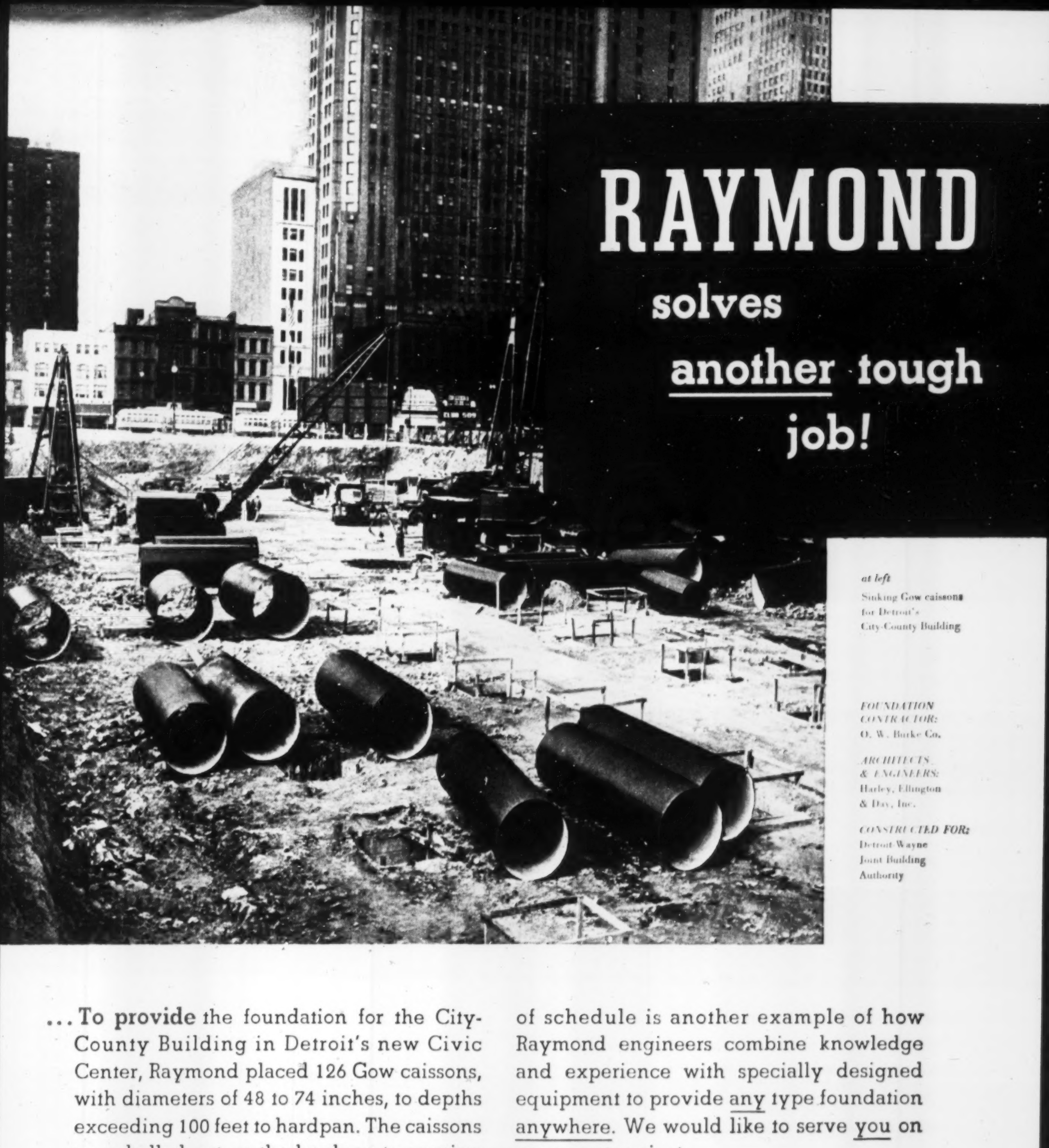
Gathering momentum

Highway construction, which chalked up a 23%-gain last year, is scheduled to increase another 34% this year. In any other type of activity or industry this would be considered a boom of major proportions. For highways it is no more than a favorable trend—and it would be a mistake to consider it otherwise in view of the great need for more and better roads. The significant fact is that the realization of this need is finally gathering momentum, backed by the will of the ordinary citizen and of his legislators to spend the necessary money.

What this money amounts to for 1953 is detailed for the first time in an article in this issue, made possible by the splendid cooperation of highway officials with Engineering News-Record's editors. All 48 state highway departments and all of the toll road authorities furnished us with their budgets, frequently as the first order of business after they were completed. For this we are grateful, as we feel sure the reader will be.

What these budgets show is that the state highway departments will spend 3% more this year for new construction than last year, with a number of individual states registering increases in the neighborhood of 50%, and one going up to 102%. But they also show that toll road construction expenditures will jump by 344%—and that toll roads account for more than a quarter of the $2.2-billion new construction total. This can be construed as meaning that the ordinary citizen—who willingly pays the tolls and frequently buys the bonds that finance these roads—is ahead of the legislators in his appraisal of what can be afforded for better highways. Still, the legislators are much more alive than for many years past to the need for more funds, so that future appropriation prospects are encouraging.

Actually, so far as this year is concerned, there is reason to doubt that a bigger program than the one projected could be carried out. The shortage of highway personnel is the principal reason, but material supplies might also prove inadequate if a larger program were tried. By next year, and as time goes on, the engineer shortage can be overcome by better salaries, and the material shortages by new production capacity. Both of these necessary developments will respond to the pressure for new highways. The 34%-gain over last year is a good omen. Several successive annual increases at this rate and highway construction will be at an adequate level—perhaps deserving to be called a boom.



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